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Proposed Fox River Power Supply Deferred

Wisconsin Legislature Postpones Consideration of $300,000 Water Reservoir Plan To Increase Summer Water Supply In Fox River Valley — Paper Men Attend 12th Annual Safety Meeting—Other Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., May 29, 1939—Consideration has been deferred by the Wisconsin Legislature for two weeks on the proposal supported by Fox River Valley Paper mills to build a storage reservoir at Lily, Wis., at a cost of $300,000 to increase the midsummer power supply. A bill has been introduced giving the Wolf River Reservoir Company authority to build the reservoir.

Attempts will be made in the meantime to iron out differences between the company and the Wisconsin Conservation Commission as to location. The commission contends the Lily location will destroy trout fishing on the Wolf River tributary of the Fox River, and insists the reservoir be on the lower river at Leeman, Wis.

C. R. Seaborne of the Thilmany Pulp and Paper Company, president, and H. F. Weckwerth, secretary, of the Fox River Water Power Users Association, have argued before the legislature for the Lily site. They point out that the Lily reservoir would provide a dam 55 feet high, and a 140,000-acre feet capacity, while the Leeman site would provide a dam 20 feet high, and a comparative storage of 70,000 acre feet. The estimated cost at Lily is $300,000 while at Leeman it is estimated the cost would be $533,000, with only half the capacity.

It is also pointed out that during the spring flood season, a total of 9,869,000,000 cubic of water is sluiced through the dams and is wasted, and the value of this waste is placed at $124,000. Most of this water could be held by the reservoir for the summer season when the flow drops to 1,000 second feet and permits of operation at only 20 per cent of power capacity. An adequate supply of pure water for paper making thus would be assured at all seasons, it was pointed out.

New Dauber Carton Machine Successful

A new machine has been perfected by the Dauber Company, Oshkosh, Wis., for the manufacture of chipboard and corrugated partitions for bottle and egg cartons, which is said to reduce the cost of manufacture about 75 per cent. The unit consists of two machines, one of which trims and slots the strips at any desired width, and the other assembles them. The cutting machine has a patented hydraulic feed that takes corrugated or chipboard a foot wide and up to six feet in length and cuts it into smaller strips, each slotted by means of a punch. The cross-wide strips come out of the machine with three slots and the lengthwise strips with five slots. The capacity is 225 strips per minute, in squares from 2 to 5 inches, and 2 to 7 inches in height. One operator can produce from 1,200 to 1,500 completed 24-cell partitions in an hour. No special skill is required. Formally, these operations were all done by hand as there was no such machine available.

Units have already been installed and are in operation at the Container Corporation, Chicago, the Downing Box Company, Milwaukee, Wis., and the Eddy Paper Company, Three Rivers, Mich. A British manufacturer also is investigating the invention.

No Demand for Paper Straw Machines

There is practically no demand in the United States for machines used to make paper straws, according to G. O. Frostad, president of the Frostad Engineering, Company Milwaukee, Wis., the only concern of its kind in this country. No new firms are entering the business because of economic conditions, and those now operating are not buying new machinery. Mr. Frostad was formerly with National Paper Can Company, much of whose equipment he designed. He has been making the straw machines for the last eight years, displacing the French and German markets in this country.

Paper Men Attend Annual Safety Meetings

Large numbers of safety and personnel executives and foremen were at Sheboygan, Wis., May 25 to attend the 12th annual Fox River Valley and Lake Shore Safety Conference. Problems of the mills were discussed in a group meeting for the pulp and paper industries. This was conducted by W. E. Strong, personnel manager for the Marathon Paper Mills Company's carton division at Menasha, Wis. The principal speaker was A. M. Schmalz, superintendent of the Thilmany Pulp and Paper Company, Kaukauna, Wis., whose subject was "The Attitude of the Plant Superintendent to His Employes in the Safety Program."

(Continued on page 16)

Chicago Market Firm and Outlook Favorable

Bond and Ledger Grades More Active and Some Increase In Sales of Paper Board Reported—Furniture Prepack Association Organized To Increase Use of Paper Board As Furniture Packing — Other Trade News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., May 29, 1939—The Chicago paper market developed no unusual features this week with demand slowing up slightly due to the pre-Memorial day business picture. Quotations in most of the markets showed firmness, though some slackening in the plup markets was reported.

Groundwoods were reported steady with some slight betterment in demand. Newsprints showed little change. Sulphite bonds were reported as unchanged while the bond and ledger line showed some inclination to more expanded volume. Book and cover papers remained as last week with volume not up to expectations but with the market fairly firm according to reports. Paper board lines were in fair shape with some expansion in demand reported. Waste papers were easy with the better grades experiencing a hesitancy in demand with market requirements fairly well taken care of for the present.

Walter Paepcke on Tax Committee

Walter Paepcke, president of the Container Corporation of America, has been appointed a member of the Committee to consider ways and means of solving Chicago's tax delinquency problem. The Committee is working in conjunction with the Greater Chicago movement developed by the Chicago Association of Commerce to invite more industries to Chicago and to give more encouragement to those firms now located in the city. A major problem confronting industries seeking new locations in Chicago is the tax situation involving delinquencies running into the millions of dollars, alleged break down of the personal property tax method of raising revenue, new demands for relief funds and other serious situations which will invite all of the skill and knowledge possessed by Mr. Paepcke and other members of the Committee.

Hazen Paper Co. Moves

Within the past few days the Hazen Paper Company has moved its headquarters from offices at 612 North Michigan Boulevard to more spacious quarters at 737 North Michigan. According to F. G. Jones, manager of the Hazen organization here, the move was necessitated because of a materially increased volume of business which had taxed the smaller capacity of the previous location.

Midwest SAPI Play Golf

The midwest division of the Salesmens Association of the Paper Industry held a most successful initial golf outing on Friday of this week. Attendance was good and the members and guests had plenty of prizes to shoot for. Luncheon, dinner and the monthly song fests were also enjoyed. Formal welcome was also extended to new members of the Association including C. N. Egan and C. H. Roueche of the Mead Sales Company and W. W. Hinnenthal of the Southern Kraft Corporation. Arrangements for the initial outing were made by George Craft, Eastern Manufacturing Company, chairman.

Furniture Prepack Association Formed

Meeting in Chicago, members of the container manufacturing industry took a long forward step in popularizing the use of paper in connection with furniture packing. Leading executives of the industry formed the Furniture Prepack Association and selected E. A. Throckmorton, general sales promotion manager of the Container Corporation of America as its head. The Association will make every effort to increase the use of paper board in furniture packing, an increase in usage which is evidenced by the fact that many leading furniture manufacturers now use paper instead of the wooden crates of previous days. The Association will have other basic purposes. It intends to recommend new specifications for furniture packing to railroad classification commissions and boards. It further plans to develop advisory materials and services for the use and benefit of furniture manufacturers and retailers indicating new uses for furniture packing as offered by the paperboard industry. Finally, the Furniture Prepack Association intends to establish uniform packing practices within its own industry and, in general, to do everything within its power to popularize and expedite the increased use of paperboard in furniture packing.

Office of the Late R. S. Bull Unfilled

The offices of Bradner Smith & Company report that no steps have as yet been taken to replace the office made vacant by the recent death of R. S. Bull, for so many years president of the Chicago paper jobbing firm. While no formal announcement has been made it is reported by Bradner Smith & Company that Mr. A. R. Martin, vice president and secretary of the company, is the active manager in charge of the big concern and will so remain until any formal announcement is released. Mr. Bull died ten days ago after a long illness. His funeral was widely attended not only by friends in the paper industry and personal acquaintances in all walks of life but also by Legion men whom Mr. Bull had known in his active army career.

Salesmen Open Golf Season

The midwest division of the Salesmens Association of the Paper Industry pries open the summer golf season next Friday afternoon, May 26, when the clan and its guests gather at the Sunset Ridge Country Club under the direction of George Craft, golf chairman. A full program with plenty of prizes and the usual entertainment and song fest in the evening are promised for what is expected to be a record breaking crowd for the "opener".

Trade Association Active in Philadelphia

Paper Trade Association of Philadelphia Hears Henry Stanley of NPTA On Distribution of Paper By Merchants — Rittenhouse Association of Paper Salesmen Announces Schedule of Future Talks On Salesmanship.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., May 29, 1939—The Paper Trade Association of Philadelphia held its second quarterly dinner meeting of the fine, wrapping and bag divisions last Friday in the Bourse restaurant, with a representative attendance. Henry W. Stanley of the Wrapping Division of the National Paper Trade Association, addressed the meeting. Mr. Stanley has a background of long experience, and previous to his appointment in the National Association, was manager of the Chamber Activities Division of the Pittsburgh Chamber of Commerce and director of the Manufacturers and Wholesalers' Bureau of that organization. In these capacities he was in close contact and active cooperation for over a year with Finley T. Jamison, who was elected president of the National Association at its recent annual convention. He went to Pittsburgh from a similar post with the Dallas, Texas, Chamber with which he was connected for eight years, directing the trade association activities of the Dallas market, covering several southern and southwestern states.

Talks on Distribution of Paper

Mr. Stanley's talk was well received. He stressed the fact that those in the paper business should advertise to the trade generally that the paper distributors really rendered service and as such should advertise what they did. He added that it should be part of the Association's job to advertise to the community and the country as a whole, just what the paper distributors were accomplishing in acting as the distributing point from the mills on one side to the users and printers on the other side.

President W. B. Killhour, in commenting on the meeting, stated that it was very harmonious with good feeling prevailing on the part of all those present, and much favorable criticism was received regarding the continuance of these quarterly meetings, which afforded opportunity to meet members of the entire trade. Le Roy A. Bishop, treasurer of the Association, supplemented president Killhour's talk on the cost survey which is being conducted by the Paper Trade Association of Philadelphia. Details of the survey, which is not entirely completed, will be available in the next couple of weeks.

Rittenhouse Association Meets June 2

The regular monthly meeting of the Rittenhouse Association of Paper Salesmen will be held Friday, June 2nd, at Dufor's restaurant at 12 o'clock. The speaker for this meeting will be a representative of the R. C. A. Victor Company, who will explain the intricacies of radio salesmanship. A. T. Snowden, chairman of the Entertainment Committee, announces the following schedule of activities for the ensuing months:

July 7—Bond Paper Selling, by George Lee, Eastern Mfg. Company.
Aug. 4—What a Printer Expects of a Paper Salesman—by R. Blattenberger, Edw. Stern & Company.
Sept. 1—Insurance Selling, by E. L. Reiley, Penn Mutual Life Insurance Company.
Oct. 6—How Advertising and Paper Work Together, by Frank Howley.
Nov. 3—Envelope Salesmanship, by Elliott L. Wright, United States Envelope Company.
December—Christmas Party.
Jan. 5——Book Paper Selling, by a representative from Champion Coated Paper Company.
Feb. 2—Selling of Coated Blanks, by J. A. Moses, Falulah Paper Company.
March 1—Index and Bristol Selling, by Sam Orton, Linton Bros. and Company.
April 5—Printing Ink and How Paper Men can Work Together, by J. R. Roberts, Chas. Eneu Johnson Company.

F. Miller Fargo New Calco President

F. Miller Fargo, Jr. executive vice president of the Calco Chemical Company, Inc. Bound Brook, N. J. has been elected President of the Company succeeding Robert C. Jeffcott, who retired April 30. Mr. Fargo has been connected with Calco since it was founded in 1915 by Mr. Jeffcott. The company was formed at the outbreak of the World War to supply certain dyes and dye intermediates which had previously been imported. Beginning with a plant covering 10 acres and consisting of three buildings, Calco has grown until it now covers over 110 acres with 100 buildings. The list of products it manufactures has passed the 700 mark. In 1929 Calco became a subsidiary of the American Cyanamid Company. It is today one of the leading dye-stuff manufacturers in the United States.

Reichold Sales Representatives

Reichold Chemicals, Inc., Detroit, Mich., industrial chemicals, has announced that Van Waters & Rogers, Inc., Seattle, Wash., has been appointed sales agent for the Reichold line in Northwest Pacific territory and that W. H. Hasse has joined the sales organization of the Fred L. Lavenburg Company, Inc., Division of Reichold Chemicals, Inc., in contacting the trade in Michigan, Northern Indiana and Ohio.

To Move Coating Unit to Plainwell

KALAMAZOO, Mich., May 29, 1939—The Coating plant of the Michigan Paper Company will be moved to Plainwell after the first of the year. The company's plant and office are in Plainwell, twelve miles from Kalamazoo, but for a number of years the coating unit has been maintained in Kalamazoo. An addition to the plant to house the coating unit is being planned at an estimated cost of $63,000.

Financial News of Pulp and Paper Industry

Anglo-Newfoundland Development Co. Reports Profit — Declares Final Dividend of 3½ Per Cent—Eastern Corp. Directors Elected—Decreased Earnings For Gaylord Container Corp. — Sorg Paper Co. Shows Loss.

New York Stock Exchange

High, Low and Last for the Week Ending May 31, 1939

	High	Low	Last
Armstrong Cork Co.	40½	38¾	40½
Celotex Corp.	13	12⅞	12⅞
Celotex Corp., pf.	65	65	65
Certain-Teed Products Corp.	8¾	8	8¼
Certain-Teed Products Corp., pf.	30¾	28½	29
Champion Paper & Fiber Co.	21½	20⅞	20⅞
Champion Paper & Fiber Co., pf.	99¼	98½	98½
Congoleum-Nairn Co.	23¾	23½	23¾
Container Corp. of America	11⅝	10¾	11⅜
Continental-Diamond Fibre Co.	8	6	7½
Crown-Zellerbach Co.	11⅜	10⅞	10½
Crown-Zellerbach Co., pf.	79⅛	78½	78½
Flintkote Co.	22¼	20½	21½
Robert Gair	2⅜	2⅜	2⅜
Robert Gair, pf.	9	9	9
International Paper & Power	9⅜	8¾	8¾
International Paper & Power, pf.	34⅜	32¼	32¼
Johns-Manville Corp.	78	73½	77
Johns-Manville Corp., pf.	130	127⅞	130
Kimberly Clark Corp.	27⅞	26½	27⅞
MacAndrews & Forbes	29	29	29
Masonite Corp.	41½	39½	41½
Mead Corp.	9	8¾	8¾
Paraffine Companies, Inc.	45½	45	45½
Rubberoid Co.	22½	22½	22½
Scott Paper Co.	50¾	50	50¾
Scott Paper Co., pf.	117¼	117	117¼
Sutherland Paper Co.	27¼	27	27¼
Union Bag & Paper Corp.	9	8½	8¾
United Paperboard Co.	4⅞	4¾	4⅞
U. S. Gypsum Co.	88¾	86	88

New York Curb Exchange

High, Low and Last for the Week Ending May 31, 1939

	High	Low	Last
American Box Board Co.	7	7	7
Brown Co., pf.	14⅜	13	14⅜
St. Regis Paper Co.	2¼	2⅛	2⅛

Anglo-Newfoundland Shows Profit

MONTREAL, Que., May 29, 1939.—The Anglo-Newfoundland Development Company, which owns the huge newsprint mills at Grand Falls, Newfoundland, as well as other important Newfoundland enterprises, including the Buchan's base metal mine, had a successful year in the twelve months ending December 31 last, according to the following cable despatch from London published here.

"The Anglo-Newfoundland Development Company, Limited, showed a profit of $1,253,400 for the financial year ending December 31, 1938, according to the annual report made public here tonight.

"The report said this figure was arrived at after deducting income taxes and allowances for depreciation and included dividends amounting to $344,190 from the Terra Nova Properties Limited. Further deductions for directors' fees, debenture interest and debenture stock redemption reduced the profit total to $640,693.

"The latter figure, added to the profit balance brought forward from the previous year, placed a total of $1,434,125.01 at the credit of the profit and loss appropriation account available for dividends and reserves.

"An interim dividend of 2½ per cent declared January 6 for shares then outstanding absorbed $212,913. The directors propose subject to approval by the shareholders at the annual general meeting, to declare a final dividend of 3½ per cent payable July 15, 1939, to shareholders registered as of July 1.

"The report said a new hydro-electric unit of 27,000 horsepower was successfully placed in operation at Grand Falls last November, increasing the total water power development to 52,000 horsepower. The paper mill operated on a reduced scale during most of 1938 because of the depressed state of the newsprint industry, it was explained. The earnings of Buchan's mine were considerably curtailed by the heavy fall in metal prices. A total of 459,000 short tons of ore was mined and milled, producing 202,433 short tons of concentrates."

Eastern Elects Directors

A board of nine directors for the Eastern Corporation, successor to the Eastern Manufacturing Company, with mills at South Brewer and Lincoln, Maine, was elected on May 23 at a meeting of the voting trustees. The meeting was held in the offices of Harold Murchie, Bangor, Me., attorney for the company.

The voting trustees, who elected the new directors and named by the District Court on April 24, were as follows: Harold L. Berry, Portland, Me.; Lloyd D. Brace, Dover, N. H.; D. Samuel Gottesman, New York; Col. Sherman N. Shumway, Bangor, Me.; and Henry J. Wheelwright, Orono, Me.

The new directors are Franklin E. Bragg, Bangor, Me.; Willard H. Cummings, Skowhegan, Me.; George F. Eaton, Bangor, Me.; Frank A. Farrington, Augusta, Me.; Edward M. Graham, Bangor, Me.; Charles L. Hildreth, Portland, Me.; Harold C. Keith, Brockton, Mass.; Edward A. McQuade, New York; and Robert L. Moore, Boston, Mass.

The company has been in the process of reorganization since 1937. According to a press dispatch the board of directors will issue the new bonds, stocks, pay the current indebtedness and take all the necessary steps to operate the company under the new reorganization plan, which went into effect on June 1.

Gaylord Earns $123,000

[FROM OUR REGULAR CORRESPONDENT]

MILWAUKEE, Wis., May 29, 1939.—Gaylord Container Corporation, which opened a plant here recently, reported net profit for the first quarter of $123,000, against $273,000 for the same period a year ago. Earnings amounted to 11 cents on the common stock, as against 38 cents a year earlier. Profit before charges was $309,000 against $475,000 in the first three months of 1938.

Sorg Paper Loses $289,317

Sorg Paper Company, for 1938 report a net loss of $289,317, contrasted with 1937 net income of $98,786, equal to 64 cents each on 17,000 common shares after dividend requirements on preferred.

TAPPI Pacific Section Discusses Forestry And Burning of Pyrites

Washington and Oregon members of TAPPI enjoyed fraternizing with their fellow members in Canada at the monthly meeting of the Pacific Section held May 6 at the Terminal City Club, Vancouver, British Columbia.

I. H. Andrews, Control Superintendent of Powell River Co., Ltd. was chairman of the meeting while arrangements for the dinner were in charge of A. E. Baker, head of the Purchasing Department of British Columbia Pulp & Paper Co. Ltd., and W. C. Grieve, manager of the Mechanical Goods Division of Goodyear Tire Rubber Company.

C. D. Orchard on Forest Administration

C. D. Orchard, Assistant Chief Forester, of the B. C. Forestry Department presented a paper entitled "Some Aspects of Forest Administration in Relation to the Pulp and Paper Industry". In remarks preceding the introduction of statistics comparing resources of British Columbia with the Pacific Northwest states, Mr. Orchard said . . . "The forester is interested only in lands incapable of growing more valuable crops than forests, that is to say, lands of sub-arable qualities. His fetish is the best use of soil resources, and his specialty, the profitable use of soils of the poorest quality. In the course of years that use has developed a wide range of variety from purely aesthetic values through watershed protection, control of erosion, parks and recreation, to the commonly-accepted primary function of the production of successive crops of wood of commercial value." The discussion for the evening was devoted considerably to the latter function noting particularly that in many of these activities it is impossible to appraise the profit accruing from the practice of forestry.

In further elaborating on the importance of natural resources and the fact that natural resources and manufacture constitute mankind's sole means of existence and only source of wealth, Mr. Orchard remarked. . . . "In this Pacific Northwest region we have the makings of this happy combination of natural resources and industrial facilities. We have cheap power in an abundance of water and native coal, fine harbours, plenty of space for expansion, and we are admirably located on the salt waterways of the world and centrally located among the great continental markets. Our weakness and our strength is our rather limited range of natural resources. Limited in metals and agricultural resources we are weak in our primary dependence on a single product; timber. Strong in that timber, apart from food products, enjoys a wider demand and steadier market than any other natural commodity. Doubly strong in that in growing sites, native species, and quality of product, we stand preeminent amongst the timber-producing regions of the world. . . . " The speaker concluded by submitting figures as to total accessible coast stands of principal commercial species in British Columbia and the total cut for each during 1937.

Paper on Economics of Pyrites Burning

The Nichols Engineering & Research Corporation of Canada prepared a paper on the economics of Pyrites burning, pertaining particularly to the Pacific Coast sulphite industry, as well as to technical problems connected with the use of Pyrites in the sulphite mills, which was presented by Mr. A. H. Lundberg, representing the Nichols Engineering & Research Corporation at Seattle.

"Trees and Men" a sound film produced by the Weyerhaeuser Timber Company was shown.

Those in Attendance

Musical selections and Community Singing completed the evening's entertainment which was attended by the following: W. A. Anderson, I. H. Andrews, G. W. Allan, John Ashby, William A. Bain, A. E. Baker, D. H. Baker, Iver E. Belsvig, Emil Berger, L. K. Bickell, G. S. Brazeau, Roscoe M. Brown, A. M. Buck, G. H. Budkin, D. M. Campbell, A. M. Cadigan, Sidney M. Collier, N. W. Coster, T. H. Crosby, Donald C. Brothers, George Dickson, G. S. Eldridge, E. Ennevaara, E. C. Ericsson, A. F. Frattinger, W. C. Grieve, F. J. Hamilton, K. L. Howe, G. D. Humphrey, A. B. Hunter, W. G. Ivanson, Walter Johnson, S. A. Kaaten, L. C. Kelley, Blain L. Kerns, L. Killiam, Robert M. Kuhn, Norman A. Lewthwaite, A. H. Lundberg, F. W. MacNeill, J. Graham Macdonald, C. C. Macdonnel, Wm. Mackay, Hugh E. Miller, J. G. G. Morgan, G. Myers, Fred Nicholson, A. F. Nicolai, E. A. Norton, R. C. Onkels, C. D. Orchard, R. S. Parry, J. W. Peckam, C. R. Rigby, W. T. Roberts, Fred Rowlands, Harlan Scott, Fred Shaneman, P. S. Simcoe, P. F. Skoog, Lawrence K. Smith, William Smith, F. J. Sparks, A. R. Webb, W. A. Webb, Norman A. White, J. D. Whittaker, C. H. E. Williams.

Customs Reopens Paper Suit

The United States Customs Court, Third Division, has authorized a rehearing of a suit brought by the Arkell Safety Bag Company, New York, claiming export values as the basis for assessment of duty on kraft paper from Sweden. The action has been remanded to a single justice for the rehearing. Originally, a single justice handed down a decision for the importers and against the foreign home market value as adopted by the customs officials for appraisement purposes. Later, the Appellate Court, while approving the export value for duty purposes, reversed the findings and ordered dismissal of the action for lack of proof as to unit prices.

Warsaw Box Co. Incorporated

[FROM OUR REGULAR CORRESPONDENT]

WARSAW, Ind., May 29, 1939—Articles of incorporation have been filed by the Warsaw Paper Box Company, Inc., formed to manufacture all sorts of paper containers. The corporation has 200 shares of no par value capital stock and the first board of directors is composed of John J. Fritz, Wabash, Ind.; Charles T. Simpson and Margaret Simpson, Winona Lake, Ind., and Vivian Fritz, Wabash, Ind.

Rubber Covered Rolls in Paper Industry*

By Parker B. Holden [1]

In considering the value of a vulcanized rubber product for any particular service, the rubber chemist has various physical properties to consider just as the paper chemist has physical properties to consider in producing a particular sheet of paper. Some of the important ones are:

(1) tensile strength; (2) modulus—stress or pull required to produce a stated definite increase in length; (3) elongation or stretch at break; (4) specific gravity and volume cost; (5) hardness; (6) resistance to abrasion; (7) resistance to tear; (8) resistance to flexing; (9) resilience; (10) permanent set; (11) thermal conductivity; (12) retention of properties at extreme high or low temperature; (13) resistance to water, oil, gasoline and acids; (14) resistance to aging (effect of heat, light and air or oxygen); (15) odor or taste.

The relative importance of the foregoing properties varies, naturally, with the particular use for which the product is intended.

The paper mill chemist varies his furnish to obtain the desired properties or characteristics. The rubber chemist varies his compound to obtain the properties desired. The compound is to the rubber chemist what the furnish is to the paper mill superintendent or chemist. As in a paper mill the beaters and jordans are manipulated according to the individual problems, so in a rubber factory the vulcanizers and mixing mills are manipulated. The most notable example of improvement in any rubber product is obviously the automobile tire, whose operating mileage has increased from a thousand or two, to 25,000 or 30,000 miles. Rubber rolls can probably show no such tangible improvement, but vast increases in operating life and operating satisfaction have been built into them. This has resulted from improved equipment, technical control and research. Strict standards for crude rubber and the practice of accepting rubber from only a selected few estates or plantations of the thousand or so available, mean that the crude rubber is of a uniform and high quality grade.

New and Better Compounding Ingredients

Research has developed a large number of new and better compounding ingredients. These may be listed principally as organic accelerators, accelerator retarders, anti-oxidants and plasticizers. Where necessary, odorants, to give a pleasant odor or remove an unpleasant one, may be introduced into the compound. Also of great assistance are the comparatively new synthetic materials such as Neoprene, Thiokol and Perbunnan. These are not rubber, but entirely new materials. For certain service conditions where heat is present and resistance to oils and solvents is essential, these materials are proving of great value. In some rubber products shoddy, or reclaimed rubber, is used and adds to the desired qualities of the compound. None of this material, however, is ever used in rubber covered rolls. Only the finest quality virgin rubber from selected estates is acceptable.

A rubber covered roll is a very simple and understandable piece of equipment as long as it performs satisfactorily. When it fails to give satisfaction, or starts to give trouble, then all of us realize that there is a great deal to be discussed and to be learned about it. The rules for correct specification and intelligent operation of a rubber roll are few and simple, and doubtless all of you are familiar with them. For a few minutes I shall try to cover the subject as interestingly as possible, and after that I hope we shall have a question and discussion period. I feel that you will obtain more benefit from that than from my talk. Except for many refinements, the actual manufacture of a rubber roll is largely the same today as it was 20 or 25 years ago. Similarly, we might say the actual procedure of making paper has changed only very slightly in the same period of time, although there have been many improvements and additions and complications added.

Help from Paper Machinery Builders

The paper machinery builders have helped a great deal by supplying better cast iron bodies. They are purer, freer from blow holes and porous spots and in better balance. Ample thickness of wall is supplied. These items are of far more importance than many of us realize, particularly when we consider that a well constructed roll core is just about a lifetime investment. The paper mills are more interested in the specification and care of their rubber rolls. They order them more carefully and watch them more closely. Our customers are infinitely more particular on their purchases today than they were, say, 10 years ago. They give more information, when buying a roll, on operating conditions, and, also, they are keeping accurate records of the service they obtain from their rolls.

The matter of storage of rolls when not in use, and of correct grinding, is also having closer attention. Apart from dimensions, the specifications of a new covering usually indicate the density by Pusey & Jones Plastometer, and the crown. The Plastometer, which is the best and most universally used instrument for determining hardness, is a dead-weight type instrument which indents the roll surface with a 1/8" ball spindle under 1,080 grams weight. The measurement is in 1/100 millimeters. Crowns are accurately measured by the Farrel Crown Indicating caliper which registers in 1/1000 inches on the roll diameter.

Types for Paper Making

For the different types of paper making and converting machinery, there are well over 35 distinct types of rubber covered rolls. Some of them are: Breast rolls, Table rolls, McDonnell Shake rolls, Lumpbreaker or Pressure roll over suction couch, Pick-up couch, Cylinder machine couch, Extractor couch, Top and bottom primary press rolls, Top press rolls of rubber, and of patented compounds, Bottom presses—plain rubber, Bottom presses—rub-

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* Presented at joint meeting of New England Section of TAPPI and Connecticut Valley Division of American Pulp and Paper Mill Superintendents Association, Roger Smith Hotel, Holyoke, Mass., April 22, 1939.

[1] Stowe-Woodward, Inc., Newton Upper Falls, Mass.

ber covered suction, Top and bottom size press, Top and bottom smoothing press, Plain and wormed felt guide rolls, Witham rolls, Wire guide, Top and bottom felt squeeze, Suction felt rolls, Paper spreading rolls, Marking and striping rolls, Minton dryer seal rolls, Wormed cutter pinch rolls, Yankee machine pressure rolls, Several types of coating rolls, Couch rolls for wet pulp, decker and Save-all machines, Slitter machine rolls, Waxing rolls, Lacquering rolls, Embossing rolls, Printing rolls.

Practically every one of these rolls must be built to distinct specifications with density range ot from 0 to 350 on the Plastometer and ground either concaved, straight face or crowned.

The surface characteristincs, too, often vary widely according to the service requirements. The ingenuity of the rubber chemist has been taxed to provide suitable rubber compounds for all these services. Research, plus the close cooperation of the paper mills has resulted in the making of a satisfactory rubber covering. Some are entirely new applications on the paper machines and others are new applications in the field of paper converting.

Recent Development and Practice

While the following ideas cannot be called new, they represent recent developments and practice. Rubber covered table rolls eliminate corrosion and help water removal because water releases itself from a rubber surface quicker than from metal. Metal table rolls which are corroded or pitted will sometimes carry the water around and back to the wire and disturb the sheet formation. Table rolls have been made as large as 10" in diameter x 240" face, in dynamic balance up to 1,300 feet.

Many breast rolls now have a thin rubber covering applied, as also the wire guide and stretch rolls. Less friction wear on the wires is claimed, with resulting longer wire life. Most of the wide, high speed news and kraft machines today operate a specially constructed light weight Lumpbreaker or Pressure roll on top of the suction couch. These rolls are also being installed on many smaller machines making other grades. They have been built from 80 inch face to 274 inch face. These rolls will give the sheet a preliminary hardening and strengthening which tends to reduce breaks at the presses and calender which might be caused by lumps, reduce pick-up at first press, permit higher operating speeds with safety, give higher smoothness test, permit increased vacuum at the suction couch which permits reduction of vacuum at the flat boxes and results in longer wire life.

There are several makes of top press rolls, composed of rubber and other ingredients, on the market to substitute for wood, granite and metal rolls. These coverings can be applied to conventional press roll cores, and where light weight rolls are required, they can be supplied without danger. The horizontal dual press, introduced a few years ago, has had very favorable reception and they are now operating in increasing numbers. This unit has three press rolls horizontally arranged. Less space is required than for the usual two vertical presses, and shorter felts can be used. The first roll is usually a rubber covered suction press. The center roll is either metal or one of the special rubber rolls mentioned a few moments ago. The third roll can be either plain rubber press, or rubber covered suction press.

In the New Southern Mills

Rubber covered bottom suction press rolls are becoming so common that little mention is required here. Where marking or crushing, with the bare suction press, is a problem, they have been very helpful. Increased water removal, longer felt life and cleaner felts are among other advantages. Practically all the new southern mills have rubber covered suction press rolls, often in both positions. Rolls 36x246½ inches have been covered. Many mills, intent on improving the surface appearance of the sheet, are installing smoothing press units. The top roll is rubber covered, usually about 40, and the bottom roll is dead hard. Wire and felt marks can usually be eliminated by the use of this unit.

For size press units, a special hard, heat-resisting compound is available for the top roll. This covering will also resist doctor scoring very successfully. These rolls must have very smooth surfaces, as any imperfections might transfer themselves to the sheet. The bottom size press roll must also be more finely textured than the ordinary wet press roll. The new processes for coating paper at machine speeds have the coating unit built into the dryer section of the machine. These rolls must have exceptionally smooth surfaces, free from any imperfections, and the rolls must be ground to extremely accurate dimensions.

Rubber covered couch rolls are becoming standard equipment on wet pulp, decker and save-all machines. Although costing considerably more than the old style felt roll, they last so much longer, and are so free from maintenance expense, that the price is well justified. Also, the problem of finding fragments of the felt in the pulp is iliminated.

Productive Life Shortened

No opportunity should be lost to list some of the ways in which a rubber roll can be abused and its productive life shortened. Incorrect thickness, density or crown; grinding at too infrequent intervals; failure to grind off enough stock to get below the distressed surface, this is particularly important when a roll shows check marks; excessive pressure; uneven pressure; imperfect surface or crown on the engaging roll; use of liquids or chemicals which are injurious to rubber, such as oils, foam killers and oil in size liquor and coating material; faulty condition of driving equipment, gears, etc., improperly designed cast iron or pipe body; compound not adapted for the service and conditions.

No Attempt at Rigid Specifications

No attempt has been made to lay down any rigid specifications or recommendations in this talk. Each rubber roll requires different treatment, and the rubber company can best serve you if complete information is given on each covering job. Previous experience is very helpful and can guide us, but there are so many variables in each machine and each mill, besides the personal ideas and preferences of the mill officials, that no standard procedure can be followed. One point we do stress is that accurate records should be kept of the performance of each roll in order that the mill may know from definite figures the time between grindings, the total life and the actual cost of the covering based on its service life. Booklets for recording this information are available without cost.

PROPOSED FOX RIVER POWER SUPPLY DEFERRED

(Continued from page 9)

Speakers at the general meetings included Voyta Wrabetz, chairman of the Wisconsin Industrial Commission, and W. J. Hodgins, president of the Lake Superior District Power Company. A mammoth safety parade was one of the features.

Another safety gathering was held at Peshtigo, Wis., Saturday, May 20, when the Badger Paper Mills Company, Inc. rewarded its employees for their record with a dinner-dance at the high school gymnasium. Approximately 400 employes and their guests were present. J. P. Pulliam of Milwaukee, Wis., chairman of the board of Badger Paper Mills, was the principal speaker, and there was entertainment, followed by dancing. During 1938 the company had only six lost-time accidents, with a total of 31 days lost.

In the inter-mill safety contest of the Kimberly-Clark Corporation, Neenah, Wis., the Atlas mill at Appleton, Wis. holds the lead. The contest runs from April 16 to September 17, and the Atlas mill thus far has a perfect safety record, whereas those at Neenah, Kimberly and Niagara, Wis. and Niagara Falls, N. Y. have had one or more.

The mill winning the contest will send three of its representatives, the manager, a salaried employe and an hourly paid employe, to the National Safety Council meeting at Atlantic City, N. J. in October with expenses paid. Second place winner will send two representatives.

Lumberjack Strike Suits Settled

An out-of-court settlement, the terms of which were not divulged, caused the dismissal by Federal Judge Patrick T. Stone at Milwaukee, Wis., of two damage suits growing out of an Upper Michigan lumberjack strike in 1937. Henry Paull, Duluth,, Minn. labor attorney sued for $250,000, and Luke Raik, an AFL union organizer, for $200,000. Among the defendants were D. C. Everest, John Stevens, Jr., and P. M. Williams, of the Marathon Paper Mills Company, Rothschild, Wis. The strike was in an area where the Marathon company was conducting timber operations. The complainants alleged they were kidnapped and beaten by "vigilantes" while attending a meeting at Ironwood, Mich. June 30, 1937.

Bill to Prevent Forest Fires Pending

A bill which is expected to diminish forest fires has been engrossed by the Wisconsin Senate and will come up soon for final action. It compels land owners and cutting operators to remove slash up to four inches in diameter within 100 feet of a highway, railroad or boundary line of an adjacent property where, in the opinion of the Wisconsin Conservation Commission, the lands bear valuable forest growth. The bill permits the state to remove the slash and charge it to the property owner if he fails to comply.

1000 At Kimberly-Clark Safety Meeting

Approximately 1,000 persons attended a meeting staged at Niagara, Wis. Saturday, May 20, the second annual safety observance of the Kimberly-Clark Corporation mill located there. The speaker was Hon. Julius P. Heil, governor of Wisconsin, who was introduced by F. J. Sensenbrenner, president. Gov. Heil paid tribute both to the company and its president when he said, "Give this country a few companies like Kimberly-Clark and about 10,000 more men like its president, Mr. Sensenbrenner, and there'll be no more unemployment." His closing message was that the people pray for the continued success of such companies as Kimberly-Clark and the continued health of such leaders as Mr. Sensenbrenner.

In a succeeding message, Mr. Sensenbrenner commented on the spirit of cooperation manifested by the people of Niagara, which, he said, "has resulted in this fine show to commemorate your record of safety work." He expressed pleasure at receiving the well wishes and a scroll signed by the Niagara workers during his observance of fifty years with the company. "No man can foretell what the future holds, but indications are that working conditions in the Kimberly-Clark plants will continue to be steady until late summer." He was introduced by E. W. Stridde, manager of the Niagara mill.

Would Increase Power to Paper Mills

The Wisconsin Michigan Power Company, Appleton, Wis., wants to augment its power supply to paper mills of the Fox River Valley by purchasing the Union Falls dam and hydro-electric plant of the Oconto River Power Company, now operated on the Oconto River at Oconto Falls, Wis., by the Union Falls Power Company. The dam and plant were built in 1923, and the dam operates on a head of 27 feet. The purchase price would be $90,000, considerably below the original investment.

Dr. Craig Heads Northwest Chemists

Dr. Kenneth A. Craig, assistant professor of chemistry at Lawrence College, Appleton, Wis., was elected chairman of the Northeast Wisconsin section of the American Chemical Society at its closing meeting May 16 at Lawrence college. He has resigned from the college to accept a position in the research laboratories of the Kimberly-Clark Corporation, Neenah, Wis. Dr. Craig succeeds Dr. Romund Moltzau, of the Institute of Paper Chemistry, Appleton. Other officers elected are: The Rev. Peter Pritzl, St. Norbert's College, De Pere, Wis., vice-chairman; Paul Eastwood of Kimberly-Clark Corporation, secretary-treasurer, and Dr. Harry F. Lewis, dean of the Institute of Paper Chemistry, councillor.

Dr. Charles Kraus of Brown University, Providence, R. I., president of the American Chemical Society, spoke at the meeting on the "Influence of Constitutional Factors on Properties of Electrolytes." Sixty attended the meeting. Dr. Kraus was tendered a testimonial banquet at the Hearthstone Tearoom prior to the meeting.

Annual reports showed the organization has enjoyed its greatest growth during the last year.

Kalamazoo Valley TAPPI Meets

The Kalamazoo Valley Section of the Technical Association of the Pulp and Paper Industry met at the Gull Lake Country Club on Thursday, June 1st.

Dr. Carl Foss of the International Printing Ink Company of New York, gave a talk on Color and Its Application. All are welcome.

Obituary

Robert F. Pitcairn

Robert F. Pitcairn, 61, secretary and treasurer of the Tarentum Paper Mills, Tarentum, Pa., died of a heart attack in his office at the plant on May 23.

A son of the late Edward and Jennie Fulton Pitcairn, Mr. Pitcairn was born in Derry, Westmoreland county, Sept. 3, 1877. The father was trainmaster of the Pittsburgh division of the Pennsylvania Railroad Company. The Pitcairn family moved to Wilkinsburg in 1889 where Robert Fulton Pitcairn attended the grade and high schools. He was graduated from East Liberty Academy in 1896. He was secretary of the Wilkinsburg Y. M. C. A. in 1896 and '97. He entered Princeton University in the fall of 1897 and was graduated with an A. B. degree in 1901.

In 1924 when a group of local men purchased the Tarentum Paper Mills, Mr. Pitcairn was elected secretary, treasurer and a director. He continued in that capacity until his death. He became actively identified with the plant one year ago last April and had been at his desk there daily since that time. Mr. Pitcairn was a former president of the Brackenridge Heights Country Club; a president of the Associated Charities of the Allegheny Valley, during its existence; an elder of the First Presbyterian Church of Tarentum and Vice Chairman of Group Eight of the Pennsylvania Bankers' Association.

K. B. Fullerton, Jr.

K. B. Fullerton, Jr., for many years Buffalo representative for the Central Paper Company died May 16.

Mr. Fullerton, known as "Ken" Fullerton, was the son of Judge Fullerton who was a prominent figure in the paper industry, and was vice-president and general manager of the Manufacturers Paper Company.

After leaving school, Ken Fullerton received his paper training at the mills of the Central Paper Company, Muskegon, Champion Paper Company, Carthage, and Remington-Martin Company, Norfolk, N. Y.

His first position with the Manufacturers Paper Company was in the Boston office, then under the charge of Frank F. Carpenter. Upon Mr. Carpenter's death, Ken became manager of the Boston office, and later became a director of Manufacturers Paper Company. Later on, he joined the Central Paper Company and opened the Buffalo office.

Richard S. Bull

Richard S. Bull, 47, president of Bradner Smith & Company, general paper merchants, Chicago, Ill., died at the Evanston Hospital on May 18 after a long illness.

Mr. Bull had spent practically his entire business life in the paper business, was prominent in the trade and actively interested in several companies. He was a former president of the Western Paper Trade Association and active in the extensive program of the National Paper Trade Association.

In the World War, Mr. Bull held the rank of major in the 333rd Field Artillery and also served with Battery C, 1st Illinois Field Artillery on the Mexico border. In 1917, Mr. Bull married Miss Sara Rozet. Surviving are his widow, three daughters Mrs. Bayne O'Brien, the Misses Sarah R. and Mary C. Bull, and a son, Richard S. Bull, Jr.

Reginald D. Stagmaier

Reginald Dewey Stagmaier, 49, vice-president and treasurer of the Archer Paper Company, general paper merchants, Chattanooga, Tenn., died of a heart attack on the way to attend evening services at SS. Peter and Paul's Catholic Church on May 11.

Born in Chattanooga, Mr. Stagmaier was the son of John Stagmaier, a leading business man and one of the founders of the Pine Breeze Sanatorium. He was educated at Notre Dame School and Baylor, was a past grand knight of the local council of the Knights of Columbus and served as an officer in the State organization for several years.

Surviving are his widow, the former Martha Bork, a son Reginald D. Jr., a daughter, Betty, four brothers and a sister, all of Chattanooga. Funeral services were held at SS. Peter and Paul's Catholic Church and burial was in Mount Olivet Cemetery.

Wood Pulp Importers Complain

A press dispatch from Washington, D. C., under date of May 23 says that a new battle between the North Atlantic ports for predominance in the handling of important commercial tonnage began today when the Association of American Wood Pulp Importers, in a complaint to the Interstate Commerce Commission, attacked storage charges on that commodity at the port of New York.

On the ground that existing charges were "palpably unfair to New York" and unduly preferential to competing ports, Wilbur La Roe, counsel for the Port of New York Authority, said that agency probably would intervene in the proceeding for the purpose of protecting New York's relationship with the other ports.

Crossett To Make Bleached Sulphate

The Crossett Paper Mills has announced that the company's bleached cylinder and Fourdrinier lines will be ready June 1. The ninety-ton bleaching plant under construction at Crossett, Arkansas, is rapidly nearing completion. The latest reports indicate that production on bleached pulp will start early in June. The cylinder machine, which has been equipped with two calendar stacks and which was put into production this month on unbleached grades, will be used in the production of high-grade bleached specialties.

In addition to the regular converter lines produced on the cylinder machine, it is planned to add standard grades of bleached M. F. papers, including butchers' wrapping paper to the lines already produced on the 210" Fourdrinier machine.

Goes With Greene, Tweed & Co.

V. B. Nickerson, for some years mid-western representative located in Chicago, has resigned from the sales force of Greene, Tweed & Co., 101 Park avenue, Chicago. To fill the vacancy accorded thereby the concern has appointed Eugene F. Bohach with headquarters at 163 E. Walton place, Chicago, Ill. as mid-western representative of the company.

Northwestern Superintendents Meet

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., May 29, 1939—More than 200 members of the Northwest division of the American Pulp and Paper Mill Superintendents Association attended the annual spring meeting at Appleton, Wis. Friday and Saturday of last week. Most of the sessions were held at the Conway hotel.

The Friday morning program included an address by Ward O. Wheeler of the Appleton Machine Company, Appleton, Wis., on "Improved Super-Calendering." Motion pictures of the Bell Telephone Company were shown, followed by an informal noon luncheon.

Friday afternoon, the superintendents visited the Institute of Paper Chemistry, and also enjoyed recreation including golf at Butte desMorts Golf Club, horseshoe pitching and skeet shooting. A stag dinner was held in the evening at the golf club at which a long list of prizes was awarded.

Golf awards included first low gross to H. W. Sherman, Northern Paper Mills, Green Bay, Wis.; second low gross to J. V. Ziman, Southern Kraft Corporation, Marinette, Wis.; first low net to Levi Le Roux, Northwest Paper Company, Brainerd, Minn., and second low net to Rudy Meyer, Badger Paper Mills, Inc., Peshtigo, Wis.

Other prizes included the highest (honest) score of 155 admitted by Harry Adrian, Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis.; J. A. Rusch of Consolidated for being the youngest superintendent on the course; Bob Kennedy, Rhinelander Paper Company, Rhinelander, Wis., for being the noisiest golfer, and Walter Johnson, Hoberg Paper Mills Inc., Green Bay, Wis., for his claim that he had never won a prize before.

William Sharpless, Ward Paper Company, Merrill, Wis., and A. Vandelaarschot, Hoberg mills, Green Bay, won the horseshoe contest prizes. The clay pigeon shooting turned out to be a duel between William Thiele, Consolidated Water Power and Paper Company, and E. C. Jacobi, A. E. Broughton Company, Glens Falls, N. Y. Mr. Thiele emerged the winner.

Saturday morning's program included a motion picture, "Trees and Men," showing woods operations of the Weyerhaeuser Timber Company on the Pacific coast, and an address by Mr. Jacobi on "Oscillating Doctors and Fuzz Collectors on Broughton Vacuum Control on Flat Boxes." Following a noon luncheon, W. P. Burleigh of the Bird Machine Company, spoke on "Removal of Dirt From Paper Stock," and H. G. Cramm, of the H. G. Cramm Company, Appleton, Wis., on "Stock Consistency Regulators" and on "Drainage Systems."

The visiting women were entertained at bridge Friday afternoon, and in the evening with motion pictures of India and the South Sea Isles by Mrs. A. B. Fisher of Appleton.

The convention closed with a banquet for both men and women at the Conway hotel at which Dr. Otto Kress, technical director of the Institute of Paper Chemistry, was the speaker. He told of the Institute's work and of some of its recent research developments.

Peter Jones of the Combined Locks Paper Company, Combined Locks, Wis., was general chairman of the arrangements. Officers of the division are: E. W. Peterson, Mosinee Paper Mills Company, Mosinee, Wis., chairman; Lewis Dozier, Rhinelander Paper Company, Rhinelander, Wis., first vice-chairman; R. J. Le Roux, Consolidated Water Power and Paper Company's Interlake division, Appleton, second vice-chairman; George H. Urban, Marathon Paper Mills Company, Rothschild, Wis., secretary-treasurer.

Indianapolis Business Gains

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., May 29, 1939—A fair level of business was maintained last week in the local wholesale field, but executives say there is less activity than expected in the market, particularly in the fine paper field. However, if steadiness continues both in demand and prices, they are not inclined to complain. The Indiana business index, after showing a steady increase since the first of the year, showed its first slight decline last month, with both jobbers and retailers affected.

Requirements of jobbers have been cut down to meet the curtailed demand and it is reported mills themselves have shown a slight recession. There have been no price disturbances during the last fortnight.

Demand for summer specialties showed a slight decline during the week, which is only temporary. Heavy buying up to that time has brought the season thus far well ahead of last year. Retailers of specialties are expecting a holiday business that will be above the average this week. Most factories have declared a holiday from last Friday until the coming Wednesday and the demand for summer specialties has picked up rapidly. This will mean a return to the market by the retailers. Tissues also are reported in good demand.

The bright spot of the business continues to be the building paper field. There appears to be no letup in demand as the season advances. Jobbers are convinced demand for roofing and all building papers will continue heavy until late in the fall and they are making their plans accordingly. They say retailer stocks, in spite of heavy buying, are not heavy and are unbalanced.

A big increase in container demand is coming from the ice cream and brewery trade. A good percentage of Indiana brewers now are using paper cases. It is estimated these cases can make four round trips to the brewery and then must be discarded.

Awarded Fellowship in Sweden

The American-Scandinavian Foundation, 116 East 64th street, New York, announces that the Nils R. Johaneson fellowship for 1939-40 has been awarded to Loren Verne Forman of Appleton, Wis. This fellowship is awarded annually to a graduate American student for a year's study and research in the pulp and paper industry in Sweden. It is a gift of Nils R. Johaneson, president of Cellulose Sales Company, Inc., 250 Park avenue, New York.

Mr. Forman graduated from Iowa State College in 1934. He has attended the Institute of Paper Chemistry in Appleton, Wis., for three years, took his M.S. degree in 1936 and is a candidate for Ph.D. in 1940. In Sweden, he will do intensive research in the field of wood pulp cellulose or lignin and will base his thesis on this subject.

New TAPPI Members and Grade Changes

The Executive Committee of the Technical Association of the Pulp and Paper Industry has approved the election to membership and the promotions in grade as follows:

Angelo M. Altieri, research chemist, Fitchburg Paper Company, Fitchburg, Mass., is a 1929 graduate of the Massachusetts Institute of Technology and he formerly was with the Dennison Manufacturing Company and U. S. Rubber Company.

Fred S. Hanson, III, student, Institute of Paper Chemistry, Appleton, Wis., received his B.S. degree from Pennsylvania State College and M. S. degree from the Institute of Paper Chemistry in 1937.

Sidney M. Collier, plant foreman, Puget Sound Pulp and Timber Company, Bellingham, Wash., was with the Cascade Paper Company for 7 years and Soundview Pulp Company for 8 years. He attended the College of Puget Sound and the University of Washington.

Sanford C. Lyons, technical director, Georgia Kaolin Company, Dry Branch, Ga., was formerly with the General Electric Company, U. S. Army Signal Corps, Bennington Scale Co. and Vermont Kaolin Corporation. He attended the Carnegie Institute of Technology and Massachusetts Institute of Technology.

Carl V. Holmberg, research fellow, New York State College of Forestry, Syracuse, N. Y., is a graduate of Michigan State College.

Albert L. Sherwood, technical director, Sutherland Paper Company, Kalamazoo, Mich., has been reinstated and was formerly with the Chemical Paper Company and National Folding Box Company. He is a graduate of Pratt Institute.

Howard W. Bartlett, 454 Livingston street, Elmira, N. Y., is a graduate of the New York State College of Forestry in Pulp and Paper Manufacture.

Thomas W. Noble, chemist, Detroit Wax Paper Company, River Rouge, Mich., was educated at Wayne University.

Cesar D. Campos, chemical engineer, Oxford Paper Company, Rumford, Me., is a graduate of Escuela de Ingenieros de Lima, Peru.

Clarence A. Lankton, student, New York State College of Forestry, Syracuse, N. Y., is studying in the Pulp and Paper Department.

W. Doyle Boggess, chemist, Beveridge Paper Company, Indianapolis, Ind., received his M.A. degree from De Pauw University.

Lionel M. Sutherland, treasurer, Sutherland Refiner Corporation, Trenton, N. J., received a B.S. degree in Pulp and Paper Manufacture from Syracuse University. He was formerly with the Donnacona Paper Company, Dill and Collins, Inc., D. M. Sutherland, Jr., and Sloane-Blabon Corporation.

Paul C. Baldwin, student, Institute of Paper Chemistry, Appleton, Wis., received a B.S. degree in Ch. E. from Syracuse University and a M.S. from the Institute of Paper Chemistry. He has worked for E. I. duPont de Nemours & Co., and Weyerhaeuser Timber Company.

James J. Spadaro, student, New York State College of Forestry, Syracuse, N. Y., has worked for the International Paper Company.

Frederick E. Stuart, president, Activated Alum Corporation, Baltimore, Md., is a 1927 graduate of the University of Alabama-Stetson University. He was formerly with the City of Daytona Beach, Fla., and West Virginia Pulp and Paper Company.

Harold R. Emerson, student and teaching assistant, Division of Forestry, University of Minnesota, St. Paul, Minn., received a B.S. degree from the above school in 1938.

Richard T. Bingham, paper development laboratory technician, Titanium Pigment Corporation, New York, N. Y., has been promoted to Active member. He was formerly with the Kimberly-Clark Corp., State of Vermont and Imperial Paper and Color Corporation.

A. J. Bailey, assistant professor, University of Minnesota, St. Paul, Minn., has been promoted to Active member. He received a Ph.D. from the University of Washington and was an instructor at the Institute of Paper Chemistry.

Robert F. Huntley, technical director, Oswego Falls Corporation-Sealright Company, Inc., Fulton, N. Y., has been with this company for 12 years and has been promoted to Active member.

George A. Thompson, Jr., paper mill representative, B. F. Perkins & Sons, Inc., Holyoke, Mass., has been promoted to Active member. He was formerly with the Whiting Paper Company, American Writing Paper Company, and the U. S. Envelope Company, and has been with his present connection for over 6 years.

Homer Eaton, engineer, formerly with Bulkley, Dunton & Co., and now in Savannah, Ga., has been promoted to Active member.

Rittenhouse Salesmen Play Golf

PHILADELPHIA, Pa., May 22, 1939—Under a blue sky and with participants imbued with the outdoor spirit, the Rittenhouse Association of Philadelphia Paper Salesmen and guests met at the Hi Top Country Club on May 18 for their annual golf tournament and outing. Hugh I. Monaghan of Wilcox-Walter-Furlong Paper Company, created quite a sensation when he appeared in a suit made entirely of paper, the cloth-pattern paper being a new product of the District of Columbia Paper Mills. Mr. Monaghan, who ordinarily is regarded as the beau brummel of the Rittenhouse Association group, was the center of attraction in his tailored-made paper suit of herringbone design.

The golf tournament was opened by Al. Snowden of D. L. Ward Company, who was very ably assisted by the members of his committee. The team tournament winners were presented with the President's award—the Harold T. Robinson trophy, which was won by Satterthwaite-Cobaugh Company, represented by Howard Satterthwaite and Arthur Brosius. The Individual Prizes, the W. C. Hamilton & Sons' trophy, was won by Arthur Brosius. Having won last year, this gives both winners a second leg on the trophies, and three wins will give them permanent possession. The Quoit tournament was closely contested and resulted in Walter Gerhab and Orland Parke of D. L. Ward Company, winning the Munising Paper Company trophy. Those not engaged in golf or quoits enjoyed the day on a soft ball game and "Locker-room Domino".

As a fitting finale an excellent dinner was served, with president, Harold T. Robinson of Whiting-Patteron Paper Company, presiding, after which the members were treated to a highly entertaining floor show lasting two hours.

Boston Paper Trade Outing

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., May 29, 1939—The regular meeting and outing of the Boston Paper Trade Association is to be held at the Charles River Country Club, Newton Centre, Mass., Monday, June 5, at which the program will be practically the same as that of a year ago.

A regular buffet luncheon will be served at the locker building from 11:30 a.m. on. Dinner will be served at 6:45 p.m., after which the prizes will be awarded. The facilities of the club will be at the disposal of the members of the Association and their guests all day. The program is scheduled on daylight saving time.

Outdoor sports will start at 2 o'clock sharp and continue through the afternoon. Prizes for first and second place will be awarded to winners at horseshoes, 2 p.m., Hubert Lockhart in charge; putting, 3:15 p.m., F. W. Masselink; bowling, 4:15 p.m., A. P. Carter, and ball game, 5 p.m., P. M. Beach. Those in charge constitute the outdoor sports committee, with Mr. Carter as chairman. The committee have provided one guest prize to be awarded to the first guest winning any one of the three events—horseshoes, putting or bowling. If no guest qualifies to receive a prize it will be awarded as a third prize in the horseshoe pitching contest.

The golf committee for the tournament, "The Event of the Year," is composed of W. J. McLellan, chairman, E. D. Bement, Nelson Feeley, P. Richardson and W. Edwin Porter, Jr. The golf program includes 18 holes handicap medal play, fourball only, medal play, kicker's handicap, and a special event—to be announced. Starting time will be 8:30 a.m.

Prizes will be awarded for first gross, first net (Challenge Cup), second net, and third net for Class A handicap 20 and under; for first gross, first net, second net, and third net for Class B handicap 21 to 28, and for Class C handicap 28 and over for best selected nine holes.

Winners of the Association Champion Cup are Charles A. Esty, William N. Stetson, Jr., Asapy Churchill, John Munro, E. Lindsey Cummings, Edward Bement, William N. Stetson, Jr., Norman Harrower, Roger P. Taft, W. Edwin Porter, Jr., John R. Whitney, W. H. Anders, John Munro, John R. Whitney, Everett Ketcham, and Graham Blandy, II.

Officers of the Boston Paper Trade Association are John L. Hobson, president; Robert M. Stone, first vice-president; Irving Esleek, second vice-president; T. Charles Casey, treasurer, and John H. Brewer, secretary.

Government Paper Bids and Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 31, 1939—Mudge Paper Company has been awarded the contract for furnishing the Government Printing Office with 3,000 pounds (15,000 sheets) of 36 x 52, 75 per cent rag, lithograph finish map paper at 11.66 cents and the same firm will also furnish 10,250 pounds (100,000 sheets) of same 30 x 40 at 11.66 cents. Bids for these items were received on May 12.

Barton, Duer & Koch Paper Company will furnish 100,000 sheets of 22 x 35 white railroad board at $25.75 per M sheets. Resolute Paper Products Company will furnish 5,000 pounds of No. 1 gummed kraft paper in 24 inch rolls at 6.86 cents. Bids for these items were received on May 10.

Mudge Paper Company will furnish 24,825 pounds (100,000 sheets) of various sized 75 per cent rag, lithograph map paper at 11.69 cents, bids for which were received on May 8.

Marquette Paper Company will furnish 159,000 pounds (1,000,000 sheets) of 31½ x 48 M.F. book paper at 4.39 cents bids for which were received on May 5.

Paper Corporation of U. S. will furnish 120,000 pounds of newsprint paper in 36 inch rolls at 2.95 cents, bids for which were received on May 1. R. P. Andrews Paper Company will furnish 4,800 sheets of 20 x 30 white tissue paper at $20. The same firm will also furnish 13,572 pounds of 33 x 39 white bristol board at 4.78 cents.

The Printing Office has received the following bids for 300,000 pounds of newsprint paper in 48 inch rolls: National Pulp and Paper Company, Inc., 2.425 cents; Paper Corporation of U. S., 2.925 cents; and Old Dominion Paper Company, 2.993 cents.

For 20,000 pounds of blue calendered tab board: Barton, Duer & Koch Paper Company, at 7.9 cents.

For 17,550 pounds (50,000 sheets) of 50 per cent rag, 38 x 48 white ledger paper: Graham Paper Company, 10.66 cents; Whitaker Paper Company, 9.5 cents; Mudge Paper Company, 8.76 cents; Old Dominion Paper Company, 9.9 cents; R. P. Andrews Paper Company, 11.94 cents; Barton, Duer & Koch Paper Company, 8.83 cents; Aetna Paper Company, 8.67 cents; Walker, Goulard Plehn Company, 9.49 cents; Butler Paper Company, 10.66 cents; and Virginia Paper Company, 9.15 cents.

For 74,800 pounds (800,000 sheets) of 32 x 42, white sulphite writing paper: Cauthorne Paper Company, 5.445 cents; R. P. Andrews Paper Company, 6.12 cents; Barton, Duer & Koch Paper Company, 5.22 cents; Stanford Paper Company, 6.77 cents; Mudge Paper Company, 6.23 cents; Old Dominion Paper Company, 5.2388 cents; Perkins-Goodwin Company, 5.24 cents; and Marquette Paper Company, 5.18 cents.

For 40,000 pounds of newsprint paper in 24 inch rolls; National Pulp & Paper Inc., 2.425 cents; Paper Corporation of U. S., 2,949 cents; and Old Dominion Paper Company, 2.992 cents.

For 42,834 pounds (75,280 sheets) of 22½ x 28½ jute tag board: Mathers-Lamm Paper Company, 9.49 cents; Mudge Paper Company, 7.55 cents; and Whitaker Paper Company, 7.3 cents.

L. O. Lane Jr. Joins Crossett Sales Force

L. O. Lane, Jr., who for several years has been associated with Gaylord Container Corporation, has joined the sales force of Crossett Paper Mills and will represent them in Ohio, Indiana, West Virginia, and Kentucky. His headquarters have been established at 1901 Knox street, Cincinnati, Ohio, telephone Wabash 0425.

Since leaving Louisiana State University, Mr. Lane has been constantly employed in the paper field. His experience in the manufacturing end both in the laboratory and the mill should be extremely helpful to converters as well as merchants in the many sales problems confronting them on special grades.

Buys Control of Bagley & Sewall

Abe Cooper of Syracuse and Watertown, N. Y., last Thursday, May 25, closed an option to purchase the 30,000 shares of capital stock of the Bagley and Sewall Company of this city and has already taken over control of the plant, although title will not pass for about three weeks.

Ample working capital is now available, as three large banks are supplying Mr. Cooper with funds. Besides the purchase of the stock Mr. Cooper has agreed to pay off the obligations of the company and takes over all assets. The business will be continued. In addition to building new Fourdrinier and cylinder paper-making machines, old machines will be rebuilt and sold.

Mr. Cooper will continue to buy up old paper mills and will rebuild and sell the machinery. He announced there would be no change in the official personnel of the company. Clarence E. Kinne will remain as president and general manager, Carroll L. Thompson, treasurer, Harry C. Kinne, secretary and sales manager, and George M. Pennock, mechanical engineer. Mr. Cooper will take no official title, although he will be the directing force of the business of the concern.

The Bagley & Sewall Company is one of the oldest industrial concerns in this section of the State. It was founded September 1, 1853 by the late George A. Bagley, Edmund Q. Sewall and George Goulding under the name Goulding, Bagley & Sewall. Mr. Goulding retired in 1861 and the company then became Bagley and Sewall. It was incorporated in 1882, and until the Cooper purchase the Bagley and Sewall families have owned it for 77 years and have controlled it for 86 years.

The high standard of design and workmanship which has characterized Bagley & Sewall Company machines for many years will be continued and it is hoped that their many customers will continue to favor the concern with their business.

Fowler Goes To Powell River

VANCOUVER, B. C., May 29, 1939—Grant M. Fowler has arrived at Powell River, B. C., to assume his new duties as general superintendent of the pulp and paper mill of the Powell River Company. He resigned a post of general superintendent with the Laurentide division of the Consolidated Paper Company to accept this new appointment.

Mr. Fowler was born at Sherbrooke, N. S., and graduated in chemistry from McGill University, also taking his M.Sc. degree there. Prior to joining the Laurentide division eleven years ago he was with the Dryden Paper Company and Canadian Forest Products Laboratory.

Georgia Kaolin Co. Gets Patent

Under Maloney patent No. 2,159,987, on Clay Product and Process of Preparing Same, issued May 16, 1939, by the Patent Office, Georgia Koalin Company come into possession of process and product claims of great interest to the paper industry, both in the machine coating and other types of coated paper, and other uses in the paper field.

Edgar Brothers Company are licensed under the patent. These two well established organizations have adequate facilities for producing clays under the patent to meet present requirements and to meet future anticipated growth in the paper industry.

Open House at Farrel-Birmingham's

On Saturday, May 13, about six thousand people availed themselves of the opportunity to visit the plant of Farrel-Birmingham Company, Inc., Ansonia, Conn. The occasion was an "Open House" to provide the families and friends of the workers and the public a chance to see the inside of the plant, its facilities and the equipment used to produce the castings, rolls and heavy machinery, which are the products of the plant.

In connection with the Open House program the committee inclued a hobby show, in which there were fifty-six entries of hobbies of all kinds. They ranged from oil paintings, sketches, photography, coin and stamp collections, tropical fish, flowers and miniature rock gardens, puzzles and trout fishing flies to a speed boat, short wave broadcasting station in operation and song recordings played through an electric phonograph, the records having been made by an employee gifted with a fine baritone voice.

In addition to the hobby show there were also exhibits of everyday products made on Farrel-Birmingham machinery and a special exhibit of the shop safety committee and the first aid classes, so that the visitors could see that some product they used every day was helped on its way to them by Farrel-Birmingham machinery and that the company made every effort to promote the health and safety of employees.

The company maintains an unusually effective course of apprenticeship training and the apprentices had a hobby show of their own, displaying tools and tool boxes made for their own personal use as well as coin collections, handmade curtains, etc. An exhibit also demonstrated the progress of the apprentices throughout their courses.

The Open House program was managed entirely by the employees of the company through employee committees of their own choosing, the management acting in an advisory capacity only and arranging for certain facilities at the disposal of the company. Employees acted as guides to direct the visitors on the tour of the plant.

Move Chase Offices To Chagrin Falls

CLEVELAND, Ohio, May 31, 1939—A Chagrin Falls mill built in 1858 and used since that time for the manufacture of paper soon will house the advertising, specialty and mailing bag departments of the Chase Bag Company.

Since the late 1920's, when the Chase company merged with the Adams Bag Co., the former has maintained a plant at the Chagrin mill, but the space now to be used for offices has been idle since that time.

The Chase Bag Company formerly had office headquarters at East 40th street and Perkins avenue. Only one unit of the Chase company will remain in Cleveland. A sales office will be maintained at 926 Union Commerce Building.

Goes With Williams-Gray Co.

L. L. Griffiths, Jr., who has for a number of years been representing the Heller & Merz Corporation, in the Middle West, will join the Williams-Gray Company, with offices at 221 North LaSalle Street, Chicago, Ill., on June 15th.

New Literature

Bulletin T-13, issued by The International Nickel Company, 67 Wall street, New York, presents technical information on monel, nickel and nickel alloys, such as chemical composition, physical constants, available mill forms and the corrosion-resisting characteristics of these materials.

Catalogue EN-95, issued by the Leeds & Northrup Company, 4907 Stenton avenue, Philadelphia, Pa., replacing catalogue No. 48, describes apparatus for electrolytic conductivity measurements in laboratory and plant. Suggestions on equipment for research in general and routine laboratory work, with lists of equipment are included. In catalogue No. 291, issued by the Barco Manufacturing Company, 1801 Winnemac avenue, Chicago, Ill., the new Barco revolving type flexible ball joints are described, which are used to supply steam, gas, or other fluids, from a fixed or stationary supply pipe to a rotating drum or member without leakage.

The Hewitt Rubber Corporation, Buffalo, N. Y., manufacturer of industrial hose, conveyor and transmission belting and molded products, has recently joined the ranks of those companies publishing house organs. The quarterly is issued under the title, *Hewitt Magazine*.

A new bulletin No. 97, covering spout type magnetic separators, has been issued by the Stearns Magnetic Manufacturing Company, Milwaukee, Wis., makers of an extensive line of magnetic separators and magnetic power transmission devices, including magnetic clutches, brakes and magnetic clutch-brake combinations.

Bulletin No. 373, issued by the Philadelphia Quartz Company, 121 S. Third street, Philadelphia, Pa., is on the subject of water corrosion control in industrial and municipal plants by the silicate of soda method. Among the principal advantages cited of this method are the elimination of "red" water, protection to water mains and service pipes, lower pumping costs, and ease of feeding, without analytical control. Descriptions of some typical installations, proper concentration of silicate and other interesting information on the subject is included in the publication.

To Start Bag Factory at Norfolk

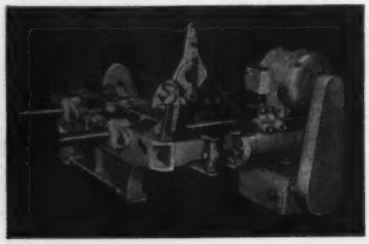
NORFOLK, Va., May 31, 1939—The establishment in Norfolk of a branch plant of the Southern Bag Corporation, a subsidiary of the Brooklyn Standard Bag Corporation, to manufacture paper bags, was announced last week by the law firm of Vandeventer & Black.

Expecting to employ between 40 and 50 white men and women, the company has signed a two-year lease for a four-story, concrete building on the south side of Front street, formerly owned by the Security Storage and Safe Deposit Co., Inc., and now administered by B. H. Smith, receiver for the corporation in the Circuit Court. The lease becomes effective July 1.

Although the proposed extent of its operations here is not known, the bag company is establishing a branch plant in Norfolk to be near the source of raw materials recently made available by the establishment of a number of kraft paper plants in the South and selected Norfolk because of its favorable location as a distributing center.

New Reeves Automatic Control

The Reeves Pulley Company, Columbus, Ind., announces a new and improved type of hydraulic automatic control for use with the Reeves Variable Speed Transmission. With the Reeves Transmission as a basis, this control provides entirely automatic speed regulation to make possible synchronization of different machines and separate sections of a single machine; maintenance of constant tension and uniform peripheral widing speeds; and maintenance of uniform pressure, weight, liquid level, temperature and other variable elements.



The control is simple and compact in design, with few working parts, sensitive and positive in speed regulation and dependable and economical in performance. Pressure of only two or three ounces will produce change in speed. Back lash and lost motion are definitely eliminated and liquid in the oil pump acts as a brake to prevent movement when the control is in "neutral", thus preventing "coasting" and "hunting".

From 6 to 20 seconds are required to shift the transmission from maximum to minimum speed and vice versa, depending on size and ratio. Protective mechanism absorbs the shock of sudden or violent shifting, thus preventing damage to control or Transmission.

As shown in the illustration, the control is mounted at one end of the transmission frame. A self-contained hydraulic power plant is mounted on the right hand set of shifting levers of the transmission (which control disc and belt diameters and thus effect speed changes). This plant consists of a small electric motor operating an oil pump in a reservoir to supply hydraulic power.

Shapiro Paper Corp. Extends Line

To its already extensive line of bond papers, the Shapiro Paper Corporation, 35 Hudson street, New York, has added the newest perfected product of Millers Falls Paper Company: Falmouth Bond and Falmouth Opaque.

Falmouth Bond is an air-dried cockle finish economical bond paper offering the bulk, color, finish and appearance of higher priced papers. It is a letterhead paper that will run perfectly on the most exacting high speed presses. It is available in white in all the standard sizes in basis 13, 16, 20, and 24, and in envelopes to match.

Falmouth Opaque is a companion sheet, but its special opacity treatment renders it particularly suitable for forms, discount sheets, rate books, reports, maps, four-page letters, and many other uses where it is desirable to print both sides. It is available in two finishes, cockle and smooth, in all the standard sizes in Sub 13, 16, 20, and 24, with envelopes to match. Attractive portfolios are being distributed containing sample sheets and very attractive printed specimens.

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PATENTS PENDING

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CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Financing and Operation of Pulp and Paper Mills

General Construction News

Asheboro, N. C.—Mid-State Box Manufacturing Company, organized to manufacture paper boxes and containers, has completed plans for new local plant, for which superstructure will soon be placed under way. It will be one-story, 75 x 100 feet, reported to cost close to $40,000, including equipment. It is proposed to have the plant ready for service during the summer.

Arlington, Tex.—The R. C. Can Company, 101 Chambers street, St. Louis, Mo., manufacturer of paper cans and containers, mailing tubes and kindred products, is considering construction of a new branch plant at Arlington, where selection of site is under way. Proposed plant will be one-story, and is reported to cost close to $50,000, including equipment.

Portland, Ore.—The Lloyd A. Fry Roofing Company, 5302 West Sixty-sixth street, Chicago, Ill., manufacturer of prepared roofing products, roofing papers, etc., has work in progress on new branch mill at N. W. Yeon and thirty-fifth avenues, Portland, previously referred to in these columns. Main unit will be one-story, 150 x 550 feet, with several smaller structures adjoining, and will be equipped for large capacity. It is proposed to have plant ready for operation early in the fall. Cost is estimated close to $200,000, including machinery. The Dougan Hammond Construction Company, Rothchild Building, Portland, is general contractor.

Pensacola, Fla.—The Armstrong Cork Company, Lancaster, Pa., has acquired the interest of the Newport Industries, Inc., Pensacola, in the Armstrong-Newport Company, with mill at Pensacola for the manufacture of insulating materials for different purposes, and will continue operations in the future under sole company direction. Production will be maintained as heretofore at the Pensacola plant. Plans are maturing for a one-story addition to be used for general operating service, and work on superstructure is scheduled to begin soon.

Cincinnati, Ohio—The United States Printing & Lithograph Company, Robertson road and Beech street, Norwood, Cincinnati, manufacturer of folding paper boxes and containers, has awarded general contract to Edward A. McCarthy & Son, 1212 Race street, Cincinnati, for rebuilding of portion of plant recently destroyed by fire, as noted in these columns, and work will be placed under way at once. The cutting and varnishing departments sustained the greatest loss.

Cleveland, Ohio—The Hankins Container Company, 3044 West 106th street, manufacturer of corrugated fiber boxes and containers, is beginning work on new addition to plant, comprising a two-story unit of about 40,000 square feet of floor space, for which general erection contract was awarded recently to the Gillmore-Carmichael-Olson Company, 1983 East Fifty-fifth street, Cleveland. Structure will be equipped for considerable increase in present capacity and is estimated to cost approximately $100,000, with equipment, instead of a smaller amount previously noted in these columns. It is expected to have structure ready for service early in the fall. Edward R. Hankins is president.

Camas, Wash.—Crown Willamette Paper Company, manufacturer of kraft, manila and other wrapping stocks, book papers, etc., is considering new addition to mill, comprising a four-story unit, to be used primarily for expansion in bag-making division, providing large increase in present production facilities. A portion of new structure will be used for bag roll storage service. Cost reported over $100,000, with equipment. Company is a division of the Crown Zellerbach Corporation, 343 Sansome street, San Francisco, Cal.

Oakland, Cal. — National Automotive Fibres, Inc., Railroad avenue and Kennedy street, manufacturer of fiber products, has preliminary plans under way for new addition to mill, consisting of a one-story structure, to be equipped for general production. It is reported to cost close to $45,000 including equipment.

Baltimore, Md. — The Baltimore Paper Box Company, Key Highway, manufacturer of folding paper boxes and containers, has approved plans for new one-story addition to plant, to be located on Covington street. It is reported to cost over $35,000, including equipment. General election contract has been awarded to the Consolidated Engineering Company, 20 East Franklin street, and work is scheduled to begin at once.

Columbus, Ohio—The Ohio Wax Paper Company, 780 Frebis avenue, manufacturer of waxed and other processed papers, is completing plans and will take bids on general contract early in June for new addition to mill, previously referred to in these columns. It will be one-story, 70 x 240 feet, equipped for large increase in present capacity, and is reported to cost approximately $250,000, with equipment. It

is proposed to carry out erection during the summer, having the structure ready for occupancy in the fall. L. A. DeGuere, Wisconsin Rapids, Wis., is consulting engineer. Edward Palmer is president.

Greenville, S. C.—The Palmetto Box Company, Greenville, recently organized with capital of $50,000, by Carl E. Morgan, Masonic Temple Building, Greenville, and associates, has plans under way for new plant at 400 Birnie street, where site has been secured, for manufacture of a line of paper boxes and containers, including various types of set-up cardboard boxes. It will be one-story, 80 x 150 feet, reported to cost about $40,000, including equipment. Erection is scheduled to be placed under way early in June. Edwin S. Dillard, 512 State street, Charlotte, N. C., is interested in new company.

Maspeth, L. I., N. Y. — The General Fiber Products Company, 36-02 35th avenue, Long Island City, manufacturer of paper products, has leased a one-story industrial building at Grand avenue and Seventy-fourth street, Maspeth, totaling about 17,000 square feet of floor space, and will occupy for new plant unit. It is proposed to take immediate possession and install equipment.

Lincoln, Neb. — The Adams Paper Company, commercial paper products, occupying the lower floor in building of the Midwest Life Insurance Company, Seventh and P streets, sustained a fire loss recently, when structure was damaged by fire. An official estimate of damage has not been announced. It will be replaced at early date.

Hoboken, N. J.—Shulton, Inc., 630 Fifth Avenue, New York, N. Y., manufacturer of soaps, has leased space in Hoboken Factory Terminal, Bloomfield and Fifteenth streets, Hoboken, in Units E and F, comprising about 73,000 square feet of floor space, and will use a considerable portion of the property for new plant for paper box manufacture for company requirements. Equipment will be installed at early date, to provide for large capacity. Another part of the space will be used for packing and packaging divisions.

Boston, Mass.—C. M. Tyler Company, 80 Holton street, is planning early rebuilding of one-story tar paper storage and distributing warehouse at 88 Holton street, recently damaged by fire with loss estimated close to $25,000. Structure forms part of company plant used for building supplies and equipment.

St. Louis, Mo.—The Thomas M. Royal Company, Seventh street and Grange avenue, Philadelphia, Pa., manufacturer of paper bags and containers, has arranged for lease of two-story building at Vandeventer and Duncan avenues, St. Louis, and will use for new branch plant. Structure will be improved and equipment installed at once for production of paper bags and containers, including bags for coffee and other food specialties.

Port Clinton, Ohio—The Celotex Corporation, 919 North Michigan avenue, Chicago, manufacturer of wall board, insulating materials, etc., has taken over property of the American Gypsum Company at Port Clinton, recently acquired, and will operate as the American Gypsum Division of the company. The plant will be used for the manufacture of wall board, liner board and allied products, and will be developed for large capacity. C. F. Miller, formerly president of American Gypsum Company, will continue as general manager at the Port Clinton plant.

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PAPER TRADE JOURNAL

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EDITOR

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Editor Technical Section

Lynne M. Lamm
Washington Correspondent

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COMING EVENTS IN PAPER INDUSTRY

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Fall Meeting, Syracuse Hotel, Syracuse, N. Y., September 12-14.

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—Second Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

AMERICAN PULP AND PAPER MILL SUPERINTENDENTS ASSOCIATION, Annual Convention, Wardman Park Hotel, Washington, D. C. June 13-15.

NATIONAL SAFETY COUNCIL, PAPER AND PULP SECTION, Annual Meeting, Atlantic City, N. J. October 16-20.

TAX REVISION PLAN

The volume of business today indicated in terms of national income is averaging approximately 65 billion dollars for the year, while last year it was around 64 billion dollars at this date. General business activity at the end of last week was nearly 10 per cent higher than in the same period last year. Some industries, such as the paper industry, was above the national average, while others, such as the steel industry, was considerably lower than the national average and remains so today.

It seems quite clear to many business men that one basic reason for the recession in industry and trade last year, was the unfortunate and ill-conceived taxation system, which includes the capital gains tax. The much criticized fiscal policy of the Administration, with its rapidly rising deficits and increase in the national debt is another obstacle, which has deterred business from normal expansion. Other deterrents referred to by the Secretary of the Treasury as "irritants" to business were and are present to act as a brake on most forms of commercial enterprise. But, it now seems likely that the poor revenue producing performance of the present scheme of taxation will be changed.

Henry Morgenthau, Secretary of the Treasury, has upon several occasions suggested a change in the current tax plan. Now it appears that Mr. Morgenthau has obtained the approval of the President and that a more equitable plan of taxation may be adopted. Any improvement in the present unsatisfactory plan should contribute much to improve business. The prepared testimony of the Secretary of the Treasury on tax revision before the House Ways and Means Committee on May 27 is encouraging.

In inferring that the Treasury would be glad to cooperate with Congress, Secretary Morgenthau presented four definite points for consideration. These were: (1) Provision in income tax laws permitting business to carry over its net losses in one year to be deducted from business profits of future years. (2) Legislation to make impossible the issuance in the future of tax-exempt securities. (3) Repeal, or lapsing, of the undistributed profits tax, which was referred to as a business "irritant". (4) Repeal of the capital stock tax and the related excess profits tax, which Mr. Morgenthau described as "very erratic in their operation".

In stating that nearly 60 per cent of the total tax revenue of the nation was collected by State and local governments, Mr. Morgenthau proposed that Congress create a small temporary national commission to report on the various aspects of intergovernmental fiscal policy and propose a plan for solving the problems involved. "When we consider any specific change in our fiscal program," Mr. Morgenthau said, "we must satisfy ourselves that the change makes for a better and not a worse distribution of tax burdens and of national income, that the change promotes and does not retard business recovery, and that the change makes easier and not more difficult progress toward the establishment of a balanced relationship between revenues and expenditures. Full attainment of these objectives is difficult at best. It is made more difficult by a new and ominous development in world affairs—the armament race now gripping the important nations of the world."

In discussing the elements of the taxation system, Mr. Morgenthau said in part: "The first group includes features which have been characterized as likely to hinder business expansion and investment. One such feature is the absence of provision in our income tax laws for carrying over net business losses to be deducted from business profits of future years. The profits or losses of each year are considered without reference to those of any other year. In consequence a business with alternating profit and loss now pays higher taxes over a period of years than does a business with stable profits, although the average income of the two firms may be equal. New enterprises and the capital goods industries are especially subject to wide fluctuations in earnings."

In referring to the excess-profits tax, Mr. Morgenthau said in part: "The excess profits tax applies to profits in excess of 10 per cent of such a declared value. The taxes are thus not really taxes on the value of capital stock or on excessive profits. . . . The tax liability they impose depends on the taxpayer's ability to forecast profits for the next three

years as well as upon the amount of profits actually realized during each of the three years. Forecasts of earnings are particularly difficult to make in the case of new businesses and those with unstable incomes, such as the capital goods industries, with the result that taxes imposed on such businesses are at times inordinately high."

In suggesting further study to avoid hasty revision that might result in the loss of revenue, Mr. Morganthau said in part: "An example (tax equity) is the limitation now placed on the deduction of corporation capital losses. Under the present law an excess of corporate losses over capital gains can be deducted from ordinary income only to the extent of $2,000." In asserting that the tax-exempt securities was highly inequitable, Mr. Morganthau said: "Tax exemption also operates as a magnet which pulls persons subject to high income taxes away from investments in private business. We should by all means pass legislation to make it impossible in the future to issue any more tax-exempt securities . . . The basic need today is to foster the full application of the driving force of private capital. We want to see capital go into the productive channels of private industry. We want to see private business expand."

Improvement Noted in Paper Industry

A substantial improvement in the paper and paperboard industry of the United States is indicated by the prevailing favorable trends, the Forest Products Division, Department of Commerce reported today.

Production of paper and paperboard in the first two months of 1939 amounted to approximately 2,000,000 tons. This was 20 per cent higher than production of the same materials in the corresponding period in 1938 and well above production in the January-February periods of 1935 and 1936.

Wood pulp production of 1,130,000 tons during the first two months of 1939 was higher than in any comparable period since 1934. Wood pulp produced in January and February of the present year was 28 per cent higher than in the corresponding two months of 1938, although production in February of this year was 16 per cent less than in January, according to the report.

Paper and paperboard mills operated at a rate of 10 to 15 per cent higher in March, 1939, than in March, 1938, indicating a continued upswing for 1939, the Forest Products Division reported.

Cape Vincent Pulpwood Co. Sold

[FROM OUR REGULAR CORRESPONDENT]

CAPE VINCENT, N. Y.,— May 29, 1939—Announcement is made of the purchase of the Cape Vincent Pulpwood Company operating an unloading and transfer terminal here for the past year, by Clarence Hall, of Clayton, who will continue to operate. Mr. Hall will take over the company and equipment and plans to carry out the contracts of the concern. He plans also to construct piers and other unloading facilities as well as dredge the harbor in order to insure a proper depth for the heavily laden boats.

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES[1]

Months	1939	1938	1937	1936	1935	1934
January	77.5%	63.9%	90.3%	76.1%	65.8%	.....
February	81.7%	68.7%	90.1%	77.9%	70.0%	.....
March	83.9%	69.6%	90.3%	76.0%	70.5%	.....
April	82.9%	68.3%	92.1%	82.3%	70.0%	.....
May	.....	69.0%	90.6%	81.6%	69.4%	.....
June	.....	66.0%	87.3%	80.7%	72.3%	.....
July	.....	72.0%	81.8%	77.3%	64.9%	.....
August	.....	77.2%	82.9%	81.5%	70.9%	.....
September	.....	76.3%	78.6%	80.5%	71.9%	58.2%
October	.....	82.5%	73.5%	87.6%	75.6%	64.7%
November	.....	79.6%	61.9%	88.0%	75.3%	61.7%
December	.....	74.4%	54.5%	85.9%	71.2%	59.6%
Year Average...	.....	72.3%	80.6%	81.3%	70.5%	.....
First 20 weeks..	81.6%	67.8%	90.6%	78.8%	69.0%	.....

COMPARATIVE WEEKLY SUMMARIES[1]

CURRENT WEEKS, 1939		CORRESPONDING WEEKS, 1938	
April 15	81.2%	April 16	68.0%
April 22	82.1%	April 23	67.4%
April 29	84.2%	April 30	70.4%
May 6	83.7%	May 7	67.1%
May 13	81.7%	May 14	67.7%
May 20	79.3%	May 21	69.7%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting—Current Weeks					
Ratio Limits	Apr. 15, 1939	Apr. 22, 1939	Apr. 29, 1939	May 6, 1939	May 13, 1939	May 20, 1939
0% to 50%	54	59	58	57	56	50
51% to 100%	249	243	244	239	224	161
Total Mills Reporting..	303	302	302	296	280	211

PAPERBOARD OPERATING RATIOS

Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1935	62%	68%	68%	63%	61%	66%	62%
1936	62%	67%	67%	70%	69%	70%	69%
1937	80%	86%	86%	88%	85%	77%	66%
1938	54%	60%	61%	57%	58%	56%	57%
1939	60%	67%	71%	69%	....	....	....

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1935	67%	71%	77%	71%	61%	66%
1936	75%	78%	82%	80%	74%	72%
1937	74%	69%	65%	55%	45%	73%
1938	66%	66%	70%	65%	59%	61%

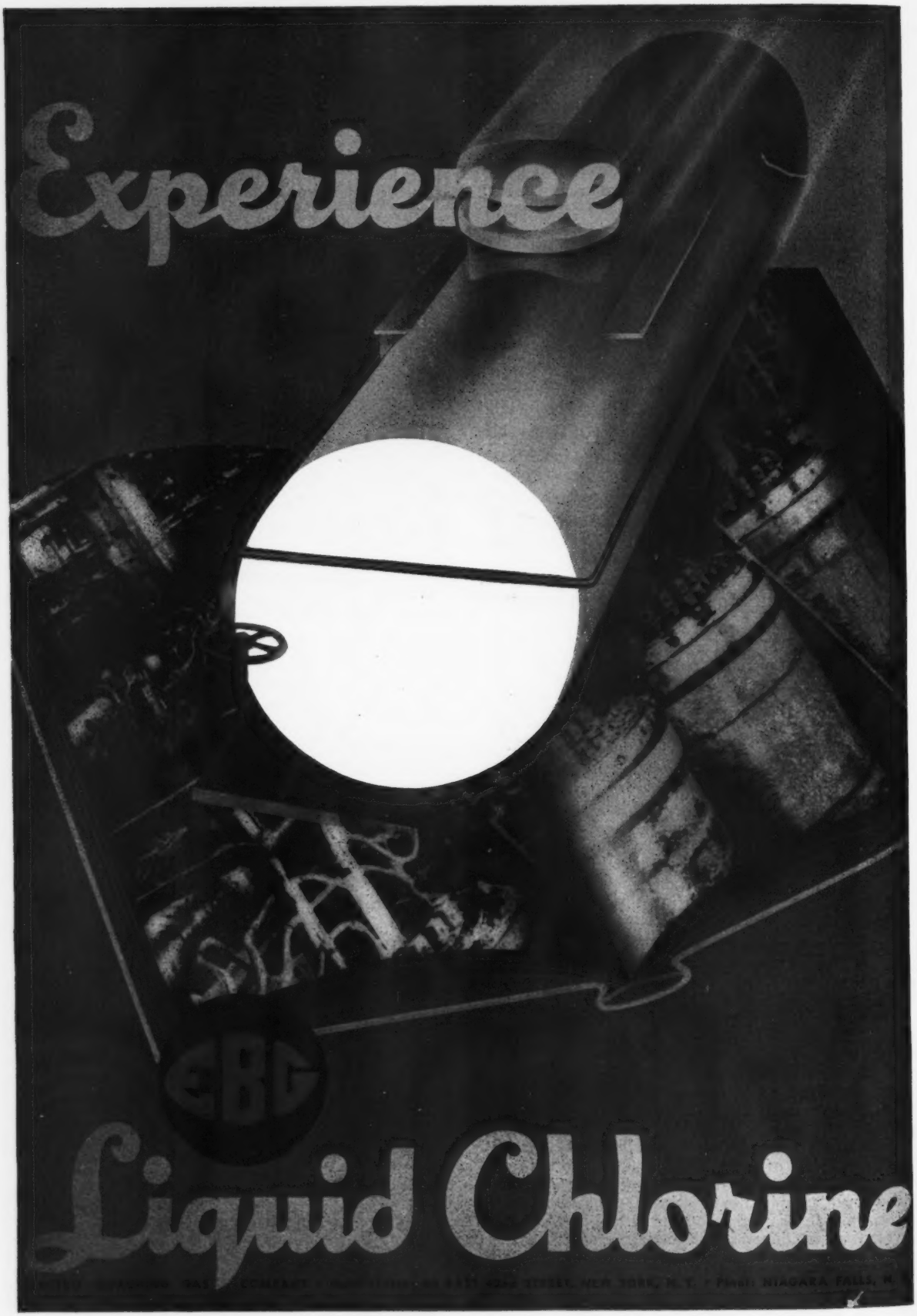
Week end. Apr. 15, 1939—67%
Week end. Apr. 22, 1939—69%
Week end. Apr. 29, 1939—68%
Week end. May 6, 1939—68%
Week end. May 13, 1939—65%
Week end. May 20, 1939—65%

[1] Production-capacity ratios are based upon six-day capacity ratings which are adjusted periodically to correspond with the ratings reported by individual companies. Ratios are subject to revision until all reports are received.

Dexter Mill Resumes Operation

[FROM OUR REGULAR CORRESPONDENT]

DEXTER, N. Y., May 29, 1939—The sulphite mill of the Dexter Sulphite, Pulp & Paper Company was placed in operation early this week returning about 75 workers to their positions. The branch has been shut down several months since the voting trustees and creditors, formerly in control, planned to liquidate the assets. Brayton C. Foster and Winfield E. McIntyre, equity receivers for the Reconstruction Finance Corporation, now operating the plant, have had a force of men at work for the past two weeks restoring the dismantled equipment, making repairs and generally placing the sulphite department in readiness for operation again. For several weeks the building up of a huge pulp wood pile has been under way and about 25,000 cords will be used between now and the start of the coming year. Shipments of Canadian pulp wood will be largely used but some shipments are being brought in from neighboring sections to be trucked to the mill.


Experience
Liquid Chlorine

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Review Of Paper Industry Literature

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C. for 10 cents each. Send currency, not stamps.

Sulphite Process

Concerning the Chemical Composition of the Knots in Spruce as Well as Its Relation in the Sulphite Cooking Process. Erik Hägglund and Sten Larsson. Papier-Fabr. 35, no. 49:475-81 (Dec. 3, 1937).—A comprehensive study is made of the subject under the following headings; the determination of the chemical composition, lignin, methoxyl and methylenoxyd, mannan, etc., length and width of the fibers in the knots, cooking experiments with raw knots from which the resin has been removed, two stage cooking of fresh knots and the cooking of the knots from the knotter. The resin content of knots from spruce wood is very high, 15.39 per cent total. The lignin content is 33.0 per cent. The fiber dimensions are 1 mm long and 0.023 mm wide. With special preparation and special cooking procedure, paper can be made from knots but the strength thereof is low.—J.F.O.

Wood Impregnation and the Cooking of Sulphite Pulp. Otto Wurz. Papier-Fabr. 35, No. 49:481-85 (Dec. 3, 1937).—The structure of the coniferous fiber, water and air content of spruce wood, wood impregnation, and the cooking of sulphite pulp are discussed. Water is found in wood in three places, in the cell sap, in the cell wall and in the hollow space in the cell. In 1 cubic meter of wood with 40 per cent moisture there is 405 liter of air, with 20 per cent moisture the air content is 582 liters. Wet green wood gives the lowest impregnation. All details of the cooking process are given.—J.F.O.

Process for the Improvement of the Heat Economics of Pulp Cooking Methods. E. Morterud, Oslo. Nor. pat. 57,679 (Jan. 7, 1935).—At the completion of the cooking, the cooking liquor is transferred to a special container at practically the same temperature and pressure, and then the steam from the cooker contents is led into one or more steam accumulators.—J.F.O.

Process for the Manufacture of Sodium Sulphite Pulp. Stora Kopparbergslags A.B. Falun. Swed. pat. 90,130 (May 26, 1934).—A part of the salt mixture is removed and substituted for other available sodium compounds which is contrary to the main patent. 87,098.—J.F.O.

Sulphite Waste Liquors

Effects of Waste Sulphite Liquor Upon Fish Life with Special Reference to Early Stages of the Chinook Salmon. H. W. Nightingale. Seattle, The Author, 1938. 34 p.—When young Chinook salmon were exposed to a 1 to 2,000 dilution of waste sulphite liquor of local pulp mill origin and of 1.050 specific gravity at 20°C. for a period of two months, no cumulative effects of a toxic nature were observed among the fish. The Chinook salmon fingerlings exposed to this sulphite liquor dilution showed an equivalent gain in weight to those under control, exhibited the same feeding and swimming behavior as those under control and showed no mortality. Gross and microscopical examination of the organs of the fingerlings exposed to this dilution showed no visible abnormalities in any instance. It is considered that this dilution of 1 to 2,000 is representative of relatively large proportions of this liquor which occurs at points in the vicinity of the pulp mills only. The exposure of significant numbers of young salmon to waste sulphite liquor in proportions as large as 1 to 2,000 on the above basis and for a period of two months is very unlikely in tidal situations.—C.J.W.

Process for the Manufacture of Transparent Soap with the Use of Sulphite Waste Liquor. K. Braun and H. Plauson, Berlin. Swed. pat. 89,763 (Feb. 7, 1935).—Raw sulphite pulp waste liquor is allowed to react with chloride of lime in a molaroid, colloid or some similar mill or if necessary under pressure and heat; neutralized and separated from the water direct through evaporation or through combination with gypsum. The material is then put in a centrifuge or filter press and then subjected to oxydation with ozone or hydrogen peroxide, concentrated in vacuum to 30 to 50 per cent and finished into soap in the usual manner.—J.F.O.

Process for the Manufacture of Activated Charcoal. H. Bergstrom and K. Cederquist, Stockholm. Swed. pat. 89,568 (April 26, 1934).—The starting product for the manufacture of activated charcoal is pulp waste liquor which material is heated in the presence of known activating substances such as zinc chloride, phosphoric acid, etc., and if necessary under the addition of activating gases at temperatures between 400 and 1200°C.—J.F.O.

Process to Yield Valuable Constituents from the Steam from Pulp Digestors. AB Rosenblads Patenter, Sodertalje. Aust. pat. 151,015 (May 15, 1937).—The relief steam from pulp digestors is condensed in a jet condensor by means of a cooling liquid sprayed directly thereon. A warm liquid results whose heat value is utilized. The quantity of cooling liquid sprayed in is regulated so that a part of the steam is not condensed but goes in a container where valuable products are removed.—J.F.O.

Current Research on Pulp and Paper in Government, Private, and University Laboratories of the United States and Canada

By Clarence J. West[1]

(Concluded from the issue of the PAPER TRADE JOURNAL *of May 25, 1939)*

STATE AND PRIVATE LABORATORIES

Boyce Thompson Institute for Plant Research, Inc. Yonkers, N. Y.

(1) PROJECT: Analyses of cellulosic substances.

INVESTIGATORS: Florence E. Barrows, Jack Compton, Jane Craighead, Wanda K. Farr, Florence E. Hooper, Richard E. Reeves, Elsa G. Richter, William R. Saner, Wayne A. Sisson, and H. Jeanne Thompson.

PURPOSE: A study of the structure and properties of cellulosic materials by means of microscopic, bacteriological, chemical, and x-ray diffraction technique.

ACCOMPLISHMENTS: Identification of ellipsoid uniform-sized cellulose particles (1.5 mu x 1.1 mu) in the living cytoplasm of certain plant cells and the observation that the cell membranes are formed by the cementing together of these crystalline cellulose unit structures by an intercrystalline material or materials. The physical and chemical behavior of the cell membranes is attributed, therefore, to the properties of the crystalline *cellulose particles* in conjunction with the highly variable intercrystalline *cementing material.*

WORK IN PROGRESS: Detailed microscopic, chemical, physical, and x-ray diffraction analyses of the natural membranes and the separated constituents from disintegrated membranes; a microscopic study of the distribution of cellulose particles in the plant kingdom; cross-sectional studies of cotton fibers in all stages of development; the action of micro-organisms on plant cell membranes and on the separated constituents of the membranes.

SUPPORT: The Chemical Foundation, Inc., New York, N. Y.

Herty Foundation Laboratory, Savannah, Georgia

The following projects are being carried on under the direction of Charles Carpenter, Technical Director, and George A. Ritter, Plant Manager, with a staff of eleven investigators.

Support is furnished by the State of Georgia and private contributions.

(1) PROJECT: Cooking and bleaching of sulphate pulps: southern pines for the production of semi-bleached pulp for news and wrappings, and bleached pulps for wrapping and bond papers; southern hardwoods for the production of bleached pulps for book and bond papers.

ACCOMPLISHMENTS: Data have been compiled on the cooking and semibleaching of pine for news; cooking and bleaching conditions have been worked out for the manufacture of book and bond stocks from black gum.

WORK IN PROGRESS: Bleached pine for wrapping and bond papers; book and bond pulps from red gum and other hardwoods.

(2) PROJECT: Cooking and bleaching of sulphite pulps: southern pines for the production of unbleached pulp for news and bleached pulp for viscose manufacture; southern hardwoods for the production of bleached pulp for viscose and for book and bond papers.

ACCOMPLISHMENTS: Data have been compiled on the pulping of pine sapwood for news and viscose pulps; cooking and bleaching conditions have been worked out with hardwoods for the manufacture of viscose pulps.

WORK IN PROGRESS: Pulping and bleaching of hardwood pulps for book and bond papers.

(3) PROJECT: Mechanical pulping of southern pine for newsprint and southern hardwoods for book and news grades.

ACCOMPLISHMENTS: Data have been compiled on the grinding of pine for newsprint on stones ranging from very fine to very course grits. The grinding of black gum for book grades has been investigated on two types of stones.

WORK IN PROGRESS: Refinements in grinding of pine for newsprint; grinding of book and news grade pulps from hardwoods on various stones.

Mellon Institute of Industrial Research University of Pittsburgh, Pittsburgh, Pa.

(1) PROJECT: Specialty papers.

INVESTIGATOR: P. B. Davidson.

PURPOSE: The development of specialty papers and the improvement of the fine and special grades of paper and paper products manufactured by the donor of the fellowship.

ACCOMPLISHMENTS: Of several special papers produced, the most successful is a decorative paper for greeting, announcement, and menu cards that has some metallic particles dispersed throughout the body of the sheet. By varying the color of these particles and the color of the paper itself, combinations are obtained that have proved to be attractive for these and such other uses as pamphlet binders and cover stocks of various kinds. Adhesives have been produced that

[1] Member TAPPI. Editor, The Institute of Paper Chemistry, Appleton, Wis. Chairman, Committee on Abstracts and Bibliography, TAPPI.

will not discolor those parts of an envelope that are sealed together during the process of manufacture. Accelerated aging tests on these adhesives have been verified by natural aging tests conducted in different sections of the country. These properties assume greater significance in the manufacture of novelties from bond and writing papers than from the less expensive wood-pulp papers. The application of sucrose octaacetate to paper imparts to certain papers a translucency that has suggested its use in greeting card stocks or other kindred specialty papers, where strength, pleasing texture, excellent printing properties, and translucency are important considerations. The demands for less expensive blueprint paper have been met by the development of a 50 per cent rag content paper that possesses excellent keeping properties and wet strength. A negative paper has also been produced that affords a darker brown colored print with its attendant greater opacity and also less danger of "silvering."

WORK IN PROGRESS: Specialty papers, particularly improving the fine and special grades of paper and paper products of interest to the donor.

SUPPORT: Fellowship founded and sustained by the Strathmore Paper Company, West Springfield, Mass.

Wisconsin State Board of Health, Madison Bureau of Sanitary Engineering

(1) PROJECT: Investigation of the biochemical oxygen demand test as applied to pulp and paper mill wastes.

INVESTIGATORS: L. F. Warrick, M. S. Nichols, and W. L. Lea (Wisconsin State Laboratory of Hygiene).

PURPOSE: To determine such changes in the biochemical oxygen demand test as may be necessary to insure the rate of oxidation in the test being closely comparable to that actually maintained in receiving streams.

ACCOMPLISHMENTS: It has been found that certain industrial wastes, such as those from pulp and paper mills, are deficient in certain elements, such as nitrogen and phosphorus, normally present in fair amount in surface streams and which are necessary for healthy bacterial growth. For such wastes, the standard test gives low oxygen demand values and, accordingly, does not afford a true indication of the pollutional strength of the wastes. By adding small amounts of nitrogen and phosphorus to the test portions, results in higher values are obtained.

WORK IN PROGRESS: Direct comparisons are being made between the rates of biochemical oxidation of mill wastes using supplemental dilution water and water from various streams of the State.

SUPPORT: Departmental funds.

(2) PROJECT: Stability of samples of waste from pulp and paper mills.

INVESTIGATORS: L. F. Warrick, F. J. McKee, and W. L. Lea.

PURPOSE: To determine whether or not it is necessary to sterilize mill waste samples being held for analysis.

ACCOMPLISHMENTS: Very little change has been noted to occur in suspended or dissolved solids and biochemical oxygen demand, when unsterilized samples have been analyzed in a fresh condition and after a storage period of one week at room temperature.

WORK IN PROGRESS: Practically complete. Further check observations are to be made with certain wastes.

SUPPORT: Departmental funds.

(3) PROJECT: Reduction of pulp and paper mill wastes entering streams.

INVESTIGATORS: L. F. Warrick and F. J. McKee.

PURPOSE: To determine the lower limits of necessary wastes from the manufacture of pulp and paper and to promote waste reduction through white water recirculation and other means; and to minimize the pollution of streams by such wastes.

ACCOMPLISHMENTS: The work is a continuation of previously reported work on the same subject. Data have been obtained which further demonstrate the feasibility of reducing fiber losses from mills of all types to one per cent or less of finished product.

WORK IN PROGRESS: Compilation of 1938 data obtained for Wisconsin mills practically completed.

SUPPORT: Departmental funds and support from mills involved.

(4) PROJECT: Effect of sulphite acid storage tank sludge on fish.

INVESTIGATORS: L. F. Warrick, Graham Walton, and L. A. Woodbury.

PURPOSE: To determine the tolerance of various game fish to the acid and sludge removed from the storage tanks at sulphite pulp mills.

ACCOMPLISHMENTS: The sludge from the acid storage tanks has been found to have a high oxygen demand and to exert toxic effects on fish exposed to the sludge. Fish apparently died from respiratory paralysis. The primary effect of the acid is to deplete very rapidly the dissolved oxygen in the water.

WORK IN PROGRESS: Practically complete. A report will be submitted to sulphite mills at an early date.

SUPPORT: Departmental funds.

(5) PROJECT: Biological oxidation of mixtures of sewage and pre-treated sulphite mill effluents.

The project has been included in the program adopted by the Advisory Committee on Waste Disposal of the Wisconsin Pulp and Paper Industry. The details are yet to be completed with the mills involved in the study.

UNIVERSITY LABORATORIES

University of Alabama, Tuscaloosa, Ala.

(1) PROJECT: Production of pulp from Siamese agricultural wastes.

INVESTIGATORS: H. F. Cotter and Yingsui Hsu.

Carnegie Institute of Technology, Pittsburgh, Pa.

(1) PROJECT: Heat stability of cellulose, lignin, and their humic acids.

INVESTIGATORS: E. Berl and Regis Raab.

PURPOSE: A study of the heat stability or instability of cellulose, lignin, and their humic acids, especially as relates to the origin of coal and oils. Because the paper and textile industries are based on cellulose, such experiments are of interest to these industries also.

ACCOMPLISHMENTS: It has been shown that cellulose and other carbohydrates are much more thermoinstable than has hitherto been believed.

WORK IN PROGRESS: These experiments have to be carried out on a broader scale. Results will be published in the *Transactions of the American Institute of Mining and Metallurgical Engineers.*

SUPPORT: Carnegie Institute of Technology.

(2) PROJECT: Investigation of cellulose and other carbohydrates and their derivatives and of lignin and its derivatives for the production of coal-like and crude oil-like materials.

INVESTIGATORS: E. Berl and Walter Koerber.

PURPOSE: Study of geochemical questions concerning the formation of these very important materials.

ACCOMPLISHMENTS: Carbohydrates are the chief parent material for bituminous coals and oils. Lignin and its derivatives are parent materials of lignites and fusains.

WORK IN PROGRESS: Extension of these experiments.

SUPPORT: Carnegie Institute of Technology.

University of Cincinnati, Cincinnati, Ohio
Department of Lithographic Research

(1) PROJECT: Testing methods covering the use requirements of paper in offset lithography.

INVESTIGATOR: R. F. Reed.

PURPOSE: Development of methods and instruments suitable for use in the testing of printing papers for ability to register in multicolor printing, and for ink reception and drying of ink.

ACCOMPLISHMENTS: Two instruments have been developed: the paper hygroscope, which indicates the hygrometric condition of paper in the pile, and a register rule for checking paper distortion and stretch during printing.

WORK IN PROGRESS: Further studies of register problems and of problems of ink reception and drying. The laboratory also cooperates with the National Bureau of Standards in their work on printing quality of paper.

SUPPORT: Lithographic Technical Foundation.

Columbia University in the City of New York
Department of Chemical Engineering

(1) PROJECT: Lignin solubilities.

INVESTIGATORS: R. H. McKee and M. G. Pelipetz.

PURPOSE: To remove and recover lignin from wood without chemical change of the lignin.

ACCOMPLISHMENTS: Results desired have been accomplished but a simplification of the process is being studied.

SUPPORT: University funds.

(2) PROJECT: Paper pulp from bamboo.

INVESTIGATORS: R. H. McKee and Hong Lau.

PURPOSE: To ascertain if the new method of producing paper pulp using hydrotropic solvents can be applied to bamboo.

ACCOMPLISHMENTS: Preliminary experiments indicate favorable results.

SUPPORT: University funds.

Harvard University, Cambridge, Mass.
The Biological Laboratories

(1) PROJECT: Planes of mechanical cleavage and of hydrolysis in native cellulose.

INVESTIGATOR: I. W. Bailey.

PURPOSE: To determine which of these planes of weakness are due to microscopically visible structures and which to submicroscopic ones.

ACCOMPLISHMENTS: Certain of the planes of mechanical cleavage are due to varying densities or porosities in the cellulosic matrix, whereas others are not. It is evident that various suggestions concerning the origin and the significance of so-called "slip-planes" are inadequate.

WORK IN PROGRESS: Investigation of the cell walls of a wider range of cell types.

SUPPORT: Harvard University and Carnegie Institution of Washington.

University of Idaho, Moscow, Idaho
School of Forestry

(1) PROJECT: The plasticization and adhesion of wood particles.

INVESTIGATORS: E. V. White and graduate students.

PURPOSE: To devise methods for the utilization of woody tissues in the production of plastic molding materials.

ACCOMPLISHMENTS: Data have been obtained indicating that woody tissues and the products thereof can be used for the preparation of molded objects.

WORK IN PROGRESS: The results obtained are being applied to a continuation and extension of the present research.

SUPPORT: Graduate student fellowships donated by Potlatch Forests, Inc., Lewiston, Idaho.

(2) PROJECT: The measurement of the "degree of gelatinization" of cellulose and wood.

INVESTIGATORS: E. V. White and graduate students.

PURPOSE: To study the physical and mechanical properties of woody tissues and of cellulose relative to the capacity of these substances to imbibe and to retain water.

ACCOMPLISHMENTS: Evaluation of the expression "degree of gelatinization" by physical methods gives a direct measure of water absorbed by cellulose and woody tissue following various mechanical and chemical treatments. A preliminary report of this study has appeared in the PAPER TRADE JOURNAL.

SUPPORT: In part by a TAPPI research grant.

(3) PROJECT: Lignin studies.

INVESTIGATORS: E. V. White and graduate students.

PURPOSE: Fundamental investigations relative to the structure and chemical reactions of lignin from woody tissues with practical implications.

WORK IN PROGRESS: This work has been initiated only recently and is proceeding along the above lines.

SUPPORT: Graduate student fellowship donated by Potlatch Forests, Inc., Lewiston, Idaho.

(4) PROJECT: The hemicelluloses.

INVESTIGATORS: H. S. Owens, John Ehrlich, E. V. White, and graduate students.

PURPOSE: To study the occurrence of arabogalactan in nature and to investigate the chemistry and degradation products of this polysaccharide.

ACCOMPLISHMENTS: Preliminary studies have made available suitable methods for isolation of arabogalactan and have yielded valuable degradation products.

SUPPORT: University funds.

University of Illinois, Urbana, Ill.

(1) PROJECT: Structure of mercerized cellulose.

INVESTIGATOR: G. L. Clark.

PURPOSE: A rigorous study of the structure of mercerized or hydrate cellulose by means of new x-ray procedures previously used in the study of cellulose.

ACCOMPLISHMENTS: The results thus far obtained indicate that a change should be made in the accepted structure of mercerized cellulose.

(2) PROJECT: Structure of lignin.

INVESTIGATOR: G. L. Clark.

PURPOSE: The determination of the composition and structure of lignosulphonic acid and its salts.

(3) PROJECT: Measurement of colloidal particle size.

INVESTIGATORS: G. L. Clark and H. D. Rhodes.

PURPOSE: Measurement of colloidal particle size by the x-ray method with special reference to the evaluation, more accurate than heretofore, of the micelle cellulose. This involves also the additional technique of impregnating the intermicellar spaces of the cellulose fiber with gold. New equations have been evolved which will make possible a far simpler technique than has previously been necessary.

The Institute of Paper Chemistry, Appleton, Wis.

The program of fundamental research being carried on at The Institute of Paper Chemistry is so closely interwoven with the various applied studies that any specific list of such projects is decidedly misleading.

During the last two years, there have been carried on in the laboratories of the Institute 112 cooperative and 63 Institute projects. These have been under the supervision of ten group leaders, working with a staff of 48 technicians. An estimate of the time devoted to the work such as would come under the heading of fundamental research shows that at least one-third of the time of the above group has been devoted to problems of this nature. Attention should be called to the fact that none of this work has been of a routine nature. These projects have been carried on in the fields of instrumentation, physics, colloids, lignin and cellulose, fiber analysis and fiber structure, microscopy and photomicroscopy, bacteriology, and wood technology.

In addition to these, there have been a large number of graduate investigations carried on by the students in the fields of fundamental science. Results of student work in 1937-1938 were embodied in five dissertations leading to the degree of Ph. D. and twelve dissertations leading to the degree of M. S. During the present academic year (1938-1939) ten students are conducting research looking toward a Ph. D. degree and twelve looking toward an M. S. degree.

The titles of the researches being carried on by candidates for the Ph. D. degree are:

1. The relation between the structure and physical properties of paperboard.
2. The use of the oxides of nitrogen for the bleaching of wood pulp.
3. The application and effects of wetting-out agents in pulp and paper manufacture.
4. The flocculation of papermaking fibers.
5. The theoretical basis for the action of sulphide in the kraft pulping process.
6. The state of dispersity of starch sols as related to methods of preparation, and its significance in papermaking.
7. Oxidation of cellulose.
8. The nature of lignin in unbleached and bleached pulps.
9. The papermaking properties of highly purified wood pulps.
10. An investigation of the coloring matter of sulphite liquor.

The titles of the M. S. researches are:

11. A mechanism of film formation from cellulose xanthate.
12. Effect of salts, including sulphates, on aluminum oxide and the use of alumina in papermaking.
13. Effects of operating variables on the modification of starches.
14. The bleaching of kraft to a high white, maintaining at the same time strength and chemical quality in the finished pulp.
15. The chemical composition of bark.
16. Cooking stain and uniformity of cook in relation to the permanganate number, chlorine number, and other methods for determining the bleachability of pulp.
17. Determination of the total acid in paper.
18. The use of alkaline extraction between the first and second stages of bleaching.
19. Saccharinic acids from black liquor as plasticizers for paper.
20. Kraft pulping of hardwoods for high yield and high quality bleached pulps.
21. Quantitative photocolorimetric study of furfural and related products.
22. The reaction of carbon disulphide with cellulose alcoholate prepared by the action of sodium metal upon cellulose.

During 1937-1938 twenty papers have appeared in the technical and scientific journals and seven papers are in course of publication, in addition to the reports of the instrumentation program, twenty-five of which were published during this interval and five of which are now in press.

McGill University, Montreal, Canada
Division of Industrial and Cellulose Chemistry

In addition to the support indicated below, a small grant to cover work on the following projects has been made by the Canadian Pulp and Paper Association.

(1) PROJECT: Structure of lignin.

INVESTIGATORS: J. L. McCarthy, W. L. Hawkins, and Messrs. Brickman, Cooke, Cramer, Dorland, Fisher, Hunter, MacInnes, Nemetz, Peniston, Pyle, Schwartz, and West (Ph. D. theses).

PURPOSE: To determine the structure of lignin and its industrial applications.

ACCOMPLISHMENTS: Manufacture of vanillin on commercial scale successfully accomplished; structure of lignin in broad outline determined.

WORK IN PROGRESS: Application of data on lignin structure to industrial uses; new work on plant substances; the finer structure of lignin.

SUPPORT: University Professorship funds, Canadian National Research Council scholarships, Carnegie Corporation (New York) funds, and industrial scholarships.

(2) PROJECT: Bleaching of pulp.

ACCOMPLISHMENTS: The laboratory work on the bleaching of kraft pulp has been completed and is now being applied industrially with considerable savings in chlorine consumption anticipated.

(3) PROJECT: Polymerization and new cellulose derivatives.

INVESTIGATORS: Stanley Perry and Messrs. Fordyce, Hewson, and Lovell (Ph. D. theses).

PURPOSE: Study of factors relating to plant synthesis, the chemical forces involved in micelle and fiber formation and relation of viscosity to chain length.

ACCOMPLISHMENTS: Long chain polyoxyethylene glycols with a molecular weight up to 7,000 have been synthesized and their viscosities determined.

WORK IN PROGRESS: The applicability of Staudinger's laws to be reviewed. Synthesis of higher members of the polyoxyethylene glycols.

SUPPORT: Canadian National Research Council scholarships and Carnegie Corporation (New York) funds.

(4) PROJECT: Investigation of bacterial polysaccharides.

INVESTIGATORS: W. L. Hawkins and T. H. Evans (Ph. D. thesis).

PURPOSE: Investigation of synthetic cellulose and other bacterial polysaccharides; mechanism of plant synthesis and role of bacterial polysaccharides in immunology.

ACCOMPLISHMENTS: A true synthetic cellulose has been made from a variety of sugars as well as from glycerol and other organic compounds. The structure of dextran has been ascertained in broad outline.

WORK IN PROGRESS: Conclusive proof of structure of dextran and relation to immunological problems.

SUPPORT: Canadian National Research scholarship and Carnegie Corporation (New York) funds.

Department of Botany

(1) PROJECT: Studies in tree physiology: seasonal changes in water content of standing trees; carbohydrate economy of the tree; frost resistance.

INVESTIGATORS: R. D. Gibbs, G. W. Scarth, J. Levitt, and D. Siminovitch.

PURPOSE: To determine optimal time of cutting to obtain information of academic interest which, however, may be of practical interest as well, in revealing seasonal changes in the chemical ingredients of wood.

ACCOMPLISHMENTS: *(a)* The water contents of *Populus tremuloides* and *Betula populifolia* are at a maximum at the end of April; at a minimum in September. Poplar fills with water in the fall; birch only partially. Both trees lose considerable water in the period November-April. *(b)* Both sugar and starch fall to a low level during spring growth and increase again during the summer. In autumn sugar increases still further at the expense of starch; this is reversed immediately prior to spring growth when both sugar and water content reach a maximum.

WORK IN PROGRESS: *(a)* Completion of work on poplar and field birch, extension to maple, yellow birch, larch, hemlock, etc. *(b)* Especial attention is being devoted to pest injury and pest resistance.

SUPPORT: National Research Council of Canada and McGill University.

University of Maine, Orono, Maine

(1) PROJECT: Drying characteristics of paper.

INVESTIGATORS: J. G. L. Caulfield, L. C. Jenness (Department of Chemical Engineering), and Frank A. Anderson.

(2) PROJECT: Determination of coefficients of sulphur dioxide absorption in a limestone acid tower.

INVESTIGATORS: Paul D. Bray, J. G. L. Caulfield, and Yong-Tsiang Kao.

Massachusetts Institute of Technology, Cambridge, Mass.

Research Laboratory of Technology

(1) PROJECT: Studies on the comparative rates of reaction of the various types of hydroxyl in cellulose.

INVESTIGATORS: F. B. Cramer, C. A. Harris, G. E. Murray, and C. B. Purves.

PURPOSE: To acquire more data concerning the proportion of the hydroxyl groups which various pretreatments leave exposed on the internal surface of cellulose; also to work out methods of differentiating between substituents in the primary and secondary hydroxyl positions.

ACCOMPLISHMENTS: The reaction of thallous ethylate and methyl iodide with ramie is being investigated. The ratio of primary to secondary hydroxyl in acetone-soluble cellulose acetate has been determined and data have been collected on the amount of primary nitrate in partly nitrated cellulose.

WORK IN PROGRESS: It is planned to extend the work on the above lines and to include x-ray and other physical studies of the thallium and iodo derivaties already prepared.

(2) PROJECT: The constitution of cellulosic materials after oxidation by various reagents.

INVESTIGATORS: D. H. Grangaard, L. J. Heidt, C. B. Purves, and M. A. Smith.

PURPOSE: It has been shown by other investigators that the glycol units in starch and cellulose give rise to glyoxal units when periodate is the oxidant. The object of the present work is to discover the extent to which this type of oxidation occurs with other selected agents.

ACCOMPLISHMENTS: Methods of isolating and estimating glyoxal and glyoxylic acids as the fully methylated derivatives have been investigated experimentally and data obtained on the occurrence of these units in oxycellulose and starches.

WORK IN PROGRESS: Extension of the above results to products obtained by other oxidizing agents and other polysaccharides.

(3) PROJECT: The purification of raw cotton and ramie by extraction with acetic acid.

INVESTIGATORS: C. B. Purves and H. F. Snow.

PURPOSE: Current methods of purifying cotton by alkaline or oxidizing treatments yield a product not always suitable for research purposes. The possibilities of the alternative acetic acid method of purification are therefore being investigated.

ACCOMPLISHMENTS: The preliminary results indicate that cold 96 per cent acetic acid extracts most of the impurities and causes little, if any, degradation of acetylation.

WORK IN PROGRESS: Development along the above lines.

(4) PROJECT: Study on lignin.

INVESTIGATORS: C. B. Purves and W. J. Wald.

PURPOSE: To discover whether or not native lignin is chemically combined with other constituents in wood.

ACCOMPLISHMENTS: Carbon and hydrogen analyses of extracted wood and the corresponding holocellulose gave, by difference, the elementary composition of the lignin *in situ*.

WORK IN PROGRESS: Confirmation of the analytical data and a study of the behavior of lignin to various new reagents.

M.I.T. School of Chemical Engineering Practice Bangor Field Station, Bangor, Maine

(1) PROJECT: Development of analytical methods.

INVESTIGATORS: R. P. Whitney, J. E. Vivian, and graduate students.

PURPOSE: To develop standard analytical methods of importance in industrial research and testing, which are not included in TAPPI Standards.

WORK IN PROGRESS: Work is nearly completed on a convenient method for the determination of sulphur dioxide and carbon dioxide in relief gases from sulphite digesters. Investigation of Orsat type methods for the determination of chlorine and carbon dioxide in the anode gas from electrolytic cells is being carried on.

(2) PROJECT: Electrolysis of sodium chloride brine.

INVESTIGATORS: R. P. Whitney, J. E. Vivian, and graduate students.

PURPOSE: To study the characteristics of several types of industrial electrolytic cells, in order to define conditions for optimum operation.

ACCOMPLISHMENTS: Considerable data have been obtained on the effect of operating variables on cell efficiency and performance. In particular, the rejuvenation of an old diaphragm by washing with water has been studied.

WORK IN PROGRESS: Study of the various factors affecting cell performance is being continued.

(3) PROJECT: Machine drying of paper.

INVESTIGATORS: R. P. Whitney, J. E. Vivian, and graduate students.

PURPOSE: To investigate the mechanism of the machine drying of paper and to study the various factors which control the drying process.

ACCOMPLISHMENTS: Machine tests have been carried out which demonstrate the applicability of existing drying theory to machine drying. The felt has been shown to be of major importance in controlling the drying process.

WORK IN PROGRESS: Work is now being carried out on the development of a suitable instrument for the precise measurement of roll, sheet, and felt temperatures on the machine.

(4) PROJECT: Measurement of chemical stack losses from alkaline process recovery furnaces.

INVESTIGATORS: R. P. Whitney, J. E. Vivian, and graduate students.

PURPOSE: To evaluate the chemical stack losses from several types of recovery equipment.

ACCOMPLISHMENTS: A modern spray-type furnace gave definitely higher losses than the older rotary type.

WORK IN PROGRESS: Further development of sampling methods is being carried out and losses from other industrial installations will be measured.

University of Michigan, Ann Arbor, Mich.
Department of Chemical and Metallurgical Engineering

PROJECTS: At the present time there are four major projects under investigation at the University of Michigan:

Drying of pulp and paper
Bleaching of paper pulp
Deinking of waste papers
Coated paper processes

Most of these are sponsored in part by the paper industry, although student research fits into the whole general group.

ACCOMPLISHMENTS: Considerable progress has been made on three of these studies, so that many of the fundamental factors that influence the operations have been evaluated.

University of Minnesota, St. Paul, Minn.
Department of Agriculture, University Farm

(1) PROJECT: Study of the chemistry of cellulose, lignin, wood, wood components, and wood products.

INVESTIGATORS: A. J. Bailey, R. A. Gortner, John M. McMillan, David Brink, and assistants.

PURPOSE: The study of both fundamental and applied problems of wood chemistry.

ACCOMPLISHMENTS: A comprehensive study of the butanolysis of wood has been completed. It has been possible to shorten existing commercial pulping processes by as much as 100 times without loss of yield and with cheap and effective recovery of the reagents used. The practical feasibility of the process has been demonstrated and application for patent protection has been made. A study was made of the fundamental chemical changes involved. New evidence was offered on the basic relationship of lignin and cellulose. Complete data have been obtained to understand the chemistry and mechanism of the pulping reactions, providing a broad basis for expansion of the problem into other fields of industrial utility. A number of reactions subsequent to pulping have been studied with the result that several promising lignin derivatives have been obtained from the waste liquor. Parallel with these studies, the change in analytical constants, such as extractives, lignin contents, isolation of lignocellulose, alpha-cellulose yields, etc., have been studied. Woods of all the commercially important pulping species have been studied in relation to delignification by butanolysis. The work confirms the basic work on lignin, namely, that conifers contain a true lignocellulose and are somewhat more difficult to pulp than the hardwoods, which do not have a true lignocellulose. Yields, lignin contents, and other data, such as alpha cellulose, pentosans, and extractives, were obtained.

WORK IN PROGRESS: The foundation work having been completed, major attention is now centered on the constitution of lignin. It has been isolated in what appears to be a pure form, but exhaustive tests are being made to purify it further. Its solubility, its salt derivatives, and classification reactions have been determined. It is expected to determine the empirical formula and the molecular weight, and to identify derivatives which will make possible a prediction of the structural formula.

SUPPORT: University funds.

(2) PROJECT: Study of the structure of wood and wood products.

INVESTIGATORS: A. J. Bailey, R. M. Brown, David Brink, and assistants.

PURPOSE: To discover and study such features or changes in wood structure which may have fundamental or practical significance.

ACCOMPLISHMENTS: A study has been completed regarding the fundamentals of sectioning technique applied to woody materials. An explanation has been offered, supported by experimental observations, on the fundamental mechanism of sectioning. Observations of practical significance and suggestions as to improved technique have been made.

Data have been collected on the structural changes in wood when subjected to butyl alcoholysis. It was found that changes and, consequently, distribution of chemical constituents were much the same as those found by other methods of delignification.

In the study of structure and adhesive forces in fiber boards, it was determined that cellulose was responsible for most of the bonding action and that lignin functions principally as a filler. This was verified for each study and by preparation of boards containing no lignin and yet having substantially the same properties as those containing lignin.

Experiments have been made on the histo-chemistry of wood fibers, resulting in the isolation of cross-elements. The actual structure and the relationship of these cross-elements to the rest of the fiber have been examined; the cross-elements have been isolated by several methods and the occurrence of these structures in various plants has been investigated.

Investigations into the basic structural units and

skin substance of wood fiber are under way. Statistical analysis of the basic structural units has given positive proof of the occurrence of units of constant size. Methods have been devised for the study of the gelatinous matrix of wood fibers, for determining the quantity of this material, and for other pertinent relationships.

WORK IN PROGRESS: It is contemplated to continue and complete such of the above projects as need further investigation. It is hoped to make a study of the fundamental structural characteristics of paper and the relationship of these characteristics to strength properties, printability, sizing, fillers, etc. Another study on the histo-chemistry of the location of the chemical constituents in wood is in view. It is desired to obtain fundamental information on the localization of the chemical constituents in wood and positive practical improvements which may be indicated.

SUPPORT: University funds.

(3) PROJECT: Study of factors affecting the durability of wood.

INVESTIGATORS: Henry Schmitz and assistants.

PURPOSE: To learn the most important conditions which contribute to the decay of wood and to learn the fundamental elements which favor wood durability.

ACCOMPLISHMENTS: Two studies were completed during the year. The first dealt with the resistance of fungi to water immersion. This study showed that some fungi were killed in about six weeks after immersion in water, while another was alive at the end of 38 weeks of immersion, thus showing that water immersion of pulp cannot be depended upon to kill the fungi with which all wood is infected. The second study dealt with the effect of dextrose and a mixture of dextrose and asparagine on the rate of wood decay. With some fungi, the rate of growth may be increased if the amounts of dextrose or of dextrose and asparagine are not too great. With other fungi, it appears that the rate of decay is decreased if the chemicals are added.

WORK IN PROGRESS: It is planned to study the effect of the addition of mineral nutrients on the rate of decay of wood and of cellulose.

SUPPORT: University funds.

(4) PROJECT: Moisture movement through wood.

INVESTIGATORS: L. W. Rees and S. J. Buckman.

PURPOSE: To determine the relative rates of moisture movement in the longitudinal, radial, and tangential directions of various woods when the moisture content of the wood is below the fiber-saturation point and above the fiber-saturation point. Also to evaluate the data in terms of the mechanism of moisture movement through wood.

ACCOMPLISHMENTS: Two studies have been completed. The first of these dealt with the moisture movement in coniferous woods below the fiber-saturation point, while the second was concerned with the movement of moisture in wood above the fiber-saturation point. In each case the rate of moisture movement in the three structural directions of the wood was determined. The data are also interpreted in terms of the mechanism of moisture movement through wood. Drying curves were presented for the six hardwoods and one softwood used in the study when the moisture content was above the fiber-saturation point.

WORK IN PROGRESS: Additional work on the rate of moisture loss above the fiber-saturation point.

SUPPORT: University funds.

(5) PROJECT: Study of alpha-cellulose.

INVESTIGATORS: R. A. Gortner and Milton Ryberg.

PURPOSE: To determine the fundamental changes which occur when alpha-cellulose is degraded by various treatments.

ACCOMPLISHMENTS: Data have been collected on the loss of alphacellulose by successive alphacellulose treatments and the formation of beta- and gamma-cellulose. Attempts have been made to peptize alpha-cellulose by mechanical agents.

WORK IN PROGRESS: Attempts will be made to peptize alpha-cellulose by wave transmission in a fluid.

SUPPORT: University and private funds.

(6) PROJECT: Study of uronic acids and pentosans.

INVESTIGATORS: R. A. Gortner and William McFarland.

PURPOSE: To determine the relationships of uronic acids and pentoses and interference of either in the determination of the other.

ACCOMPLISHMENTS: The uronic acids have been determined in six woods and the fundamental relationships involved have been studied.

WORK IN PROGRESS: It is expected to determine the uronic acid content and pentosans in twelve woods to learn the true pentosan content, i. e., total furfural-yielding material minus uronic acids.

SUPPORT: University and private funds.

(7) PROJECT: Flow of liquid in capillaries and wood.

INVESTIGATORS: R. A. Gortner and B. E. Anderson.

PURPOSE: To learn the mechanism of and the conditions affecting fluid flow in wood.

ACCOMPLISHMENTS: The rate of flow has been determined in various woods and in lignin deposits.

WORK IN PROGRESS: A comparison will be made of the rate of fluid flow in various woods and other materials, so that the basic relationships involved in the penetration of wood by liquids may be learned.

SUPPORT: University and private funds.

New York State College of Forestry at Syracuse University, Syracuse, N. Y.

(1) PROJECT: The effect of particle size on the efficiency of a rosin suspension.

INVESTIGATORS: C. E. Libby and Firth Dennett.

PURPOSE: To determine the extent to which the dimensions of the rosin particle in a size suspension affects the retention of rosin and the degree of sizing imparted to paper.

ACCOMPLISHMENTS: Data have been developed which indicate that retention of rosin is independent of particle size and that the optimum dimension is a particle having a diameter not greater than 0.7 microns. A pronounced decrease in sizing value is indicated for particles having a diameter greater than 1.0 micron.

SUPPORT: College fellowship.

(2) PROJECT: The precipitation of rosin size.

INVESTIGATORS: C. E. Libby and William Dohne.

PURPOSE: To study the mechanism of rosin size precipitation, utilizing a group of selected chemical compounds, with sizes prepared by different processes and possessing varying characteristics.

ACCOMPLISHMENTS: Methods of preparing sizes of the desired characteristics have been worked out and precipitation studies completed with one group of chemicals.

SUPPORT: Laboratory facilities and chemicals furnished by the College.

(3) PROJECT: The pulping of red pine *(Pinus resinosa)*.

INVESTIGATORS: C. E. Libby and John Studeny.

PURPOSE: It is proposed to reinvestigate the possibilities of this wood as a source of newsprint pulp, both mechanical and chemical, employing young trees in which pitch difficulties may be no more troublesome than in the young pines of other species, indigenous to the South.

ACCOMPLISHMENTS: A supply of pulpwood has been prepared and evaluated physically and chemically. A series of sulphite pulping tests are now underway.

SUPPORT: College fellowship.

(4) PROJECT: A study of sheet formation as a filtration process.

INVESTIGATORS: W. O. Hisey and C. H. Heigl.

PURPOSE: Elucidation of basic factors affecting formation of fibrous sheets and the effect of certain fiber characteristics on formation.

ACCOMPLISHMENTS: Apparatus constructed and investigation underway.

SUPPORT: College fellowship.

(5) PROJECT: Measurement of the degree of gelatinization of cellulose and wood.

INVESTIGATORS: E. C. Jahn and graduate students.

PURPOSE: To investigate the relation of the percentage of water retained by a cellulosic mat under pressure to the physical properties of the cellulose fibers or wood particles and particularly to determine the relationship of water retention to changes in stuff and sheet properties brought about by beating.

ACCOMPLISHMENTS: A progress report on the first half of this work has been published (PAPER TRADE J., Sept. 1, 1938). This project is near completion.

SUPPORT: In part by a TAPPI research grant and, up to Sept., 1938, by the University of Idaho, where the work to that date was done.

(6) PROJECT: The relation of lignin content to the strength of paper and pressed boards.

INVESTIGATORS: E. C. Jahn and C. V. Holmberg.

PURPOSE: To determine the relation of lignin to measurable physical properties of fiber products made from pulps of varying lignin content.

SUPPORT: In part by a TAPPI grant.

(7) PROJECT: The production of dense and light types of fiber boards and the modification of their properties.

INVESTIGATORS: E. C. Jahn and graduate students.

PURPOSE: A study of methods of preparing structural fiber products of varying types of physical and chemical properties.

ACCOMPLISHMENTS: Previous work on this project at the University of Idaho has been reported in the literature.

SUPPORT: College funds.

(8) PROJECT: Chemistry of lignin and lignocellulose.

INVESTIGATORS: E. C. Jahn and S. Coppick.

PURPOSE: To obtain fundamental information concerning the chemistry of lignin, the relationship of lignin and cellulose in wood, and the chemistry of lignin reaction products.

ACCOMPLISHMENTS: Phenol, methyl, and sulphur derivatives have been studied.

SUPPORT: College funds.

(9) PROJECT: The plasticization and adhesion of wood particles and pulp fibers.

INVESTIGATORS: E. C. Jahn, S. Coppick, and John Levy.

PURPOSE: To study the chemistry and preparation of wood and pulp plastics, particularly the adhesion of gelatinized wood, the coalescence of wood by the action of heat, and the chemical plasticization of lignin and wood.

ACCOMPLISHMENTS: Conditions for obtaining optimum strength by coalescence under heat and pressure have been determined, the technique of molding gelatinized wood has been studied, and lignin plastics have been prepared, this work having been done at the University of Idaho.

SUPPORT: From Sept., 1938, by New York State College of Forestry funds.

(10) PROJECT: Reactions of cellulose with organic chemicals.

INVESTIGATORS: E. C. Jahn, William R. Davis, and F. C. Peterson.

PURPOSE: The objectives are the fundamental chemical and constitutional studies of products resulting from the interaction of cellulose and various organic chemicals and the technology and utilization of such products.

ACCOMPLISHMENTS: The preparation of a number of cellulose derivatives has been studied.

SUPPORT: An annual grant from the Dow Chemical Company for three years.

North Carolina State College of Agriculture and Engineering of the University of North Carolina, Raleigh, N. C.

(1) PROJECT: Xanthation studies.

INVESTIGATORS: D. B. Wicker and W. D. Jacobson.

PURPOSE: To develop apparatus and technique necessary to evaluate the comparative quality of chemical cellulose samples in xanthation reactions; to investigate the effects of certain variables upon the progress and results of xanthation reactions; and to investigate the addition of materials other than cellulose to the xanthation mixture.

WORK IN PROGRESS: Construction of the apparatus is near completion and the work will be carried out along the above lines.

SUPPORT: University funds.

(2) PROJECT: Investigation of non cellulosic constituents of native trees.

INVESTIGATORS: D. B. Wicker and W. D. Jacobson.

PURPOSE: To determine the nature of amounts and potential value of the minor constituents of certain species of native trees.

WORK IN PROGRESS: The general nature of a number of constituents has been recognized and methods for their separation and purification are being developed.

SUPPORT: Private funds.

(3) PROJECT: Survey of fiber characteristics of cotton stalks and other annual plants.

INVESTIGATORS: University students.

PURPOSE: To determine the amounts and more particularly the physical characteristics of the constituents of certain annual plants with special reference to their possible suitability or unsuitability as a source of cellulose.

WORK IN PROGRESS: The work is carried on by undergraduate students, who are engaged in collecting samples, seting up apparatus, etc.

SUPPORT: University funds.

University of North Carolina, Chapel Hill, N. C.

(1) PROJECT: Study of the permeabilities of cellulosic membranes to gases and vapors.

INVESTIGATOR: Sherman E. Smith.

PURPOSE: To determine the extent and mechanism of permeation of all sorts of cellulosic films by gases and vapors and to apply this information to the problem of the fine structure of these films.

ACCOMPLISHMENTS: The results indicate that gas penetration of cellulosic films always takes place by a modified solution process, and that considerable information as to the interstitial spacing and binding forces in cellulose and cellulose derivatives may be obtained by this method.

WORK IN PROGRESS: The work is being continued along the above lines.

(2) PROJECT: Recovery of oil and alpha-cellulose from whole cotton.

INVESTIGATORS: Frank K. Cameron, Director. D. T. Milne is studying the extraction of oil by various solvents at Chapel Hill, and Mr. Dockery is studying at Rockingham the control of plant growth by cultural methods and harvesting methods. Recent workers have been J. P. Sanders, A. T. Clifford, A. R. Macormac, E. G. Egan, and George Holroyd.

PURPOSE: To determine if the cotton plant (an annual) can be developed as a commercial source of alpha-cellulose. To find a crop, particularly for the farmers of the Carolinas, to replace the growing of cotton for lint, which can probably be done elsewhere more economically.

ACCOMPLISHMENTS: It has been shown that by close planting, substituting harrowing for hoeing, and cutting down on fertilizer applications, the plant can be brought to a maximum production of cellulose in about 26 weeks. The whole plant is harvested and baled with the same type of equipment used for hay; it can be stored in the open for years without deterioration. The dry plant is easily pulverized and the oil extracted. For this purpose a low-boiling point paraffin is best. The residue is in the best possible physical condition for pulping. On the laboratory scale, alpha-cellulose has been prepared from the whole cotton and from lint, stems, and cusps independently, by the sulphate, sulphite, alkali, and nitric acid methods. These celluloses and derivatives are the same as those from spruce, poplar, and pine. Consumption of reagents in processing appears to be somewhat less for cotton than for the woods. Harvesting by mechanical methods has been demonstrated successfully by the John Deere Company.

WORK IN PROGRESS: Study of the oils extracted by various solvents; study of comparative methods of pulping to find if there is a preferable one for "whole cotton" and to provide sufficient amounts of pulp for practical tests in making rayon, plastics, etc.; continuation of cultivation tests on different varieties of cotton; continuation of mechanical methods of harvesting. Preparation of cellulose derivatives from whole cotton directly without intermediate pulping.

SUPPORT: Earlier support was supplied by the Cotton Producers Cooperative Association and the John Deere Company. The Cotton Foundation, through the Mellon Institute for Industrial Research, is supporting a fellowship during 1938-1939 for the work on cellulose derivatives. All other expenses have been carried by the investigators themselves.

The Ohio State University, Columbus, Ohio Department of Chemistry

(1) PROJECT: Constitution of cellulose and related polysaccharides.

INVESTIGATORS: M. L. Wolfrom, J. C. Sowden, three graduate students and one senior student.

PURPOSE: To study the fundamental organic chemistry of cellulose and related polysaccharides.

ACCOMPLISHMENTS: The course of hydrolysis of the cellulose molecule has been followed by allowing a solution of high viscosity cotton linters in fuming hydrochloric acid to hydrolyze at 16 deg. C. and following the course of hydrolysis by mercaptalation at various time intervals. Ethyl mercaptan was used, since this reagent reacts with the free reducing groups of carbohydrates in high concentrations of mineral acids to form mercaptals or thioacetals. Sulphur analyses on the resulting mercaptalated hydrolyzed celluloses then gave an estimate of their average molecular size.

SUPPORT: E. I. du Pont de Nemours & Co., Inc., cellulose fellowship, and University funds.

Department of Chemical Engineering

(1) PROJECT: Influence of potassium salts in the pulping of woods.

INVESTIGATORS: G. B. Hughey and James R. Withrow.

PURPOSE: To investigate the influence of the various wood pulping processes of small to large quantities of potassium salts and potassium double salts; in search of a possible utilization of the western polyhalite deposits.

ACCOMPLISHMENTS: The data indicate that large and small additions of potassium chloride to the sulphate cook have no noticeable effect on the yield or chemical characteristics of the fibers produced.

Oregon State Agricultural College, Corvallis, Oregon

(1) PROJECT: Study of lignin and lignosulphonic acids.

INVESTIGATOR: Leo Friedman.

PURPOSE: To gain further information concerning the nature of lignin and to study its possible utilization.

WORK IN PROGRESS: A study of the lignin in western hemlock and of the lignosulphonic acids formed during the sulphite pulping of this wood.

SUPPORT: Some of the materials are supplied by pulp manufacturers, the remainder by the Department of Chemistry, Oregon State College; fellowship supported by the General Research Council of the Oregon State System of Higher Education.

Pennsylvania State College, State College, Pa. School of Mineral Industries

(1) PROJECT: Investigations on acetylbromolignin.

INVESTIGATOR: Walter Fuchs.

PURPOSE: An investigation of the constitution of lignin.

ACCOMPLISHMENTS: The study of Karrer's acetylbromolignin has shown it to be a complicated mixture of substances. Through its solubility in benzene and the solubility of its saponification product in cold alkali it was characterized as an acetyl derivative of the lignindiol series. Acid hydrolysis in dioxane or acetic acid gives glucose, thus proving at least a partly glucosidic nature. Chromatographic analysis of the benzene solution of the stabilized original product gives a number of fractions, some of which yielded crystalline compounds from suitable solvents.

WORK IN PROGRESS: Continuation of the above work along the lines sketched above.

Reed College, Portland, Oregon

(1) PROJECT: Study of the mechanism of the reactions involved in the treatment of lignin with chlorine.

INVESTIGATOR: Walter R. Carmody.

PURPOSE: To ascertain the nature of the lignin molecule, its structure and molecular weight, and the nature of the groups in the molecule from an analysis of the several reactions that occur when chlorine reacts with lignin.

WORK IN PROGRESS: The lignin has been prepared and the chlorination reaction will be studied this year.

University of Washington, Seattle, Washington Department of Chemistry and Chemical Engineering

(1) PROJECT: Penetration of liquids into wood chips.

INVESTIGATORS: H. K. Benson, J. H. Rantz, and A. P. Ratliff.

PURPOSE: Effect of variables on the pretreatment of wood with ammonium hydroxide.

(2) PROJECT: Precipitation of solids from sulphite waste liquors.

INVESTIGATORS: H. K. Benson and L. A. Boyer.

PURPOSE: Solubility studies of solids obtained from sulphite waste liquor by various methods.

(3) PROJECT: A chemical study of the waste liquor obtained in the pulping of wood by ammonium bisulphite.

INVESTIGATORS: H. K. Benson and R. M. Williams.

PURPOSE: Complete analysis of the liquor and determination of its chemical composition.

(4) PROJECT: Acetoacetic ester and other organic substances as pulping agents for Douglas fir.

INVESTIGATORS: H. K. Benson and B. W. Bailey.

PURPOSE: Solubility studies of lignin in organic solvents.

(5) PROJECT: Design and construction of semiplant pulping equipment.

INVESTIGATOR: K. A. Kobe.

PURPOSE: To design and construct a semiplant pulp laboratory for experimental work.

ACCOMPLISHMENTS: Constructed digester, knotter, flat screen, decker and test equipment.

SUPPORT: W. P. A. and University funds.

(6) PROJECT: Nitration reactions of *p*-cymene.

INVESTIGATORS: K. A. Kobe and T. F. Doumani.

PURPOSE: To improve nitration processes for *p*-cymene and its derivatives.

ACCOMPLISHMENTS: Mononitration and reduction accomplished.

SUPPORT: University funds.

(7) PROJECT: Halogenation reactions of *p*-cymene.

INVESTIGATORS: K. A. Kobe and H. M. Brooks.

PURPOSE: To improve halogenation reactions for *p*-cymene and its derivatives.

SUPPORT: University funds.

(8) PROJECT: Reduction of *p*-cymene.

INVESTIGATORS: K. A. Kobe and A. Vittone.

PURPOSE: To produce *p*-menthane from *p*-cymene.

ACCOMPLISHMENTS: A high yield of *p*-menthane is obtained when *p*-cymene is reduced by hydrogen under pressure with Raney nickel catalyst.

SUPPORT: University funds.

(9) PROJECT: Specific heats of sulphate and soda black liquors.

INVESTIGATORS: K. A. Kobe and A. J. Sorenson.

PURPOSE: To determine the specific heats for evaporator design and testing.

ACCOMPLISHMENTS: Specific heats were determined, the results being the same for sulphate and soda liquors.

SUPPORT: University funds.

(10) PROJECT: Alkaline pulping of Douglas fir.

INVESTIGATORS: K. A. Kobe and P. F. Lueth.

PURPOSE: A study of a proposed alkaline pulping liquor.

SUPPORT: University funds.

(11) PROJECT: Rayon pulp from Douglas fir.

INVESTIGATOR: K. A. Kobe.

PURPOSE: To produce a high alpha-cellulose pulp from Douglas fir.

ACCOMPLISHMENTS: A high alpha-cellulose has been produced.

SUPPORT: Private funds.

(12) PROJECT: Pressure-volume-temperature relations of gaseous mixtures of sulphur dioxide and water.

INVESTIGATORS: W. L. Beuschlein and A. W. Hawkins.

PURPOSE: Thermodynamic relations existing in systems under pressure.

SUPPORT: University funds.

(13) PROJECT: Joule-Thomson coefficients for mixtures of sulphur dioxide and water.

INVESTIGATORS: W. L. Beuschlein and E. A. Murray.

PURPOSE: Thermodynamic relations existing under pressure systems.

SUPPORT: University funds.

(14) PROJECT: Further studies on the system calcium oxide-sulphur dioxide-water.

INVESTIGATORS: W. L. Beuschlein and O. A. Simenson.

PURPOSE: The determination of the solubility of lime in sulphurous acid solutions at elevated temperatures and acid pressures.

SUPPORT: University funds.

(15) PROJECT: Absorption rate coefficients in a wetted wall tower for sulphur dioxide in aqueous solutions, with temperature, lime content, liquid and gas velocity effects.

INVESTIGATORS: W. L. Beuschlein and Chas. Hunter.

PURPOSE: Absorption rate determinations.

ACCOMPLISHMENTS: Work indicates slight effect of lime content.

SUPPORT: University funds.

Wayne University, Detroit, Mich. College of Engineering

(1) PROJECT: Specific gravities and refractive indices of alum solutions.

INVESTIGATORS: D. S. Davis, Harold N. Bogart, and Charles P. Overton.

PURPOSE: To develop a means for the calculation of the concentration of industrial alum solutions from temperature and specific gravity determinations and from temperature and refractive index determinations.

ACCOMPLISHMENTS: New data on the effect of temperatures and concentration upon the specific gravities of alum solutions have been correlated and presented nomographically. Data covering the effect of temperature and concentration upon the refractive indices of alum solutions have been determined.

WORK IN PROGRESS: Mathematical correlation

and eventual nomographic presentation of the refractive index data.

(2) PROJECT: Small laboratory beater.

INVESTIGATORS: D. S. Davis and Harold Johnson.

PURPOSE: To design and construct an inexpensive one-half pound laboratory beater.

ACCOMPLISHMENTS: The tub is cast and the parts are being machined.

(3) PROJECT: Digest of the literature of freeness.

INVESTIGATORS: C. R. Cousins and Joseph Goldin.

PURPOSE: To prepare a digest of the literature of freeness, indexed as to author, subject matter, year, and journal.

ACCOMPLISHMENTS: Existing abstracts of the literature on freeness have been examined critically and largely revised and rewritten, with special attention to supplying exact references and adequate indices. Some new abstracts have been added.

(4) PROJECT: The freeness of paper products.

INVESTIGATORS: D. S. Davis and C. R. Cousins.

PURPOSE: To determine the freeness of a large variety of paper products, using the Williams Model B 1927 and Williams Precision freeness testers and to present a conversion curve for these testers covering the same paper products.

ACCOMPLISHMENTS: Typical freeness values for many paper products have been determined, using the sedimentation and orifice type testers and a single mathematical expression has been proposed to represent interconversion.

(5) PROJECT: Specific gravities of rosin size emulsions.

INVESTIGATORS: D. S. Davis and Harold N. Bogart.

PURPOSE: To develop a means for the calculation of concentration of industrial rosin size emulsions from temperature and specific gravity determinations.

ACCOMPLISHMENTS: New data on the effect of concentration and temperature upon the specific gravity of rosin size emulsions have been collected.

WORK IN PROGRESS: Mathematical correlation and eventual nomographic presentation of the rosin size data.

Delaware Valley TAPPI Elects

Election results of the Delaware Valley Section of the Technical Association of the Pulp and Paper Industry are as follows: Chairman—C. M. Connor, Valley Forge Laboratories, Conshohocken, Pa.; Vice Chairman—J. F. Halladay, Container Corporation of America, Manayunk, Pa.; Secretary—C. W. Hoffman, Riegel Paper Corporation, Milford, N. J.; Treasurer—C. A. Shubert, Dill & Collins, Inc., Philadelphia, Pa. Executive Committee: J. d'A. Clark, Scott Paper Company, Chester, Pa.; G. L. Schwartz, Dupont Company, Wilmington, Del.

The closing meeting of the season will be held June 9th at the Bala Country Club, 50th Street and Woodbine Avenue, Philadelphia. There will be golf in the afternoon and a dinner-dance in the evening, and all are welcome.

International Wire Works Expands

MENASHA, Wis., May 29, 1939—International Wire Works, 433 Sixth Street, is to start construction shortly of an addition to cost approximately $9,000. The building will be used for additional equipment to increase the plant's capacity for paper mill wires.

Canadian Forestry Association Elects

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., May 29, 1939—At the Canadian Forestry Association's (B. C. branch) annual meeting held at the Terminal City Club, Vancouver, B. C., A. R. Macfarlane, managing director of the Eburne Saw Mills, Limited, was elected president, succeeding O. A. Jorgenson, B. C. Pulp & Paper Company, retiring president.

Mr. Macfarlane is a well-known lumberman throughout Canada and is an active conversationist, showing a keen interest in the youth activities of British Columbia.

Named as directors of the B. C. branch for 1939 are: R. Adamson, C. A. Bartram, Bartram Paper Products; Dr. A. H. ayne, E. G. Baynes, S. G. Blaylock, C. P. Browning, R. L. Cobb, H. S. Foley, T. A. Kelley, J. McInnis, A. McKelvie, Geo. P. McLauchlin, A. E. McMaster, H. J. Mackin, W. T. Moodie, R. Richardson, C. P. W. Schwengers, H. P. Wilson, J. A. Young; and those to be added to the board for this year are: Col. F. . J. Stephenson, W. F. Stewart and Dewey Anderson.

The meeting named Hon. A. Wells Gray, Minister of Lands, and E. C. Manning, provincial chief forester, as directors ex-officio.

Charles Wilkinson, manager of the B. C. branch, stated: "The association is now appointing 1,000 new recruits in the Junior Forest Warden organization, which will bring the total number to 9,000 this year, working throughout every district of this province in defense of woods, waters and wild life."

Jeffrey Issues New Catalogue

A 960-page General Catalog No. 87, containing valuable information on its complete line of chains, reduction, and all types of material handling equipment is announced by the Jeffrey Manufacturing Company.

Profusely illustrated and containing well-arranged tabular matter, the data in this book is so presented that the engineer can incorporate this class of equipment in his plans with the least amount of effort and delay. It covers the broad service Jeffrey offers to practically every known industry through a complete line of conveyors, elevators, chains, sprockets, transmission machinery, electric vibrating, feeders, screens, coolers, dryers, crushers, pulverizers, shredders, portable loaders and conveyors, stackers, etc.

To obtain a copy of this General Catalogue No. 87 make known your request on Company letterhead to The Jeffrey Manufacturing Company, Columbus, Ohio.

Lake States TAPPI Officers

At the May 9th meeting of the Lake States Section of the Technical Association of the Pulp and Paper Industry, the following officers were elected for the ensuing year: Chairman—Richard Nugent, Nekoosa Edwards Paper Company, Port Edwards, Wis.; Vice Chairman—M. L. Downs, Thilmany Pulp & Paper Company, Kaukauna, Wis.; Secretary-Treasurer—Harold Johnson, Fox River Paper Company, Neenah, Wis.; Executive Committee—S. D. Wells, Institute of Paper Chemistry, Appleton, Wis.; and E. H. Voightman, Kimberly-Clark Corporation, Neenah, Wis.

Imports of Paper and Paper Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

NEW YORK IMPORTS

WEEK ENDING MAY 27, 1939

SUMMARY

Cigarette Paper.....647 cs.
Wall paper.....7 pkgs., 3 cs.
Paper hangings.....5 bls.
Newsprint.....152 bls., 32 bdls., 21,820 rolls
Printing paper.....17 cs.
Wrapping paper.....775 bls., 4697 rolls, 3 cs.
Filter compound.....10 bls.
Filter paper.....16 cs.
Drawing paper.....31 cs.
Metal covered paper.....11 cs.
Photo paper.....10 cs.
Decalcomanias.....9 cs.
Tissue paper.....5 cs.
Writing paper and envelopes.....4 cs.
Writing paper.....1 cs.
Cardboard.....3 cs.
Paper cloth.....4 bls.
Paper tubes.....59 cs.
Miscellaneous paper.....76 cs.

CIGARETTE PAPER

De Manduit Paper Corp., *Champlain,* Havre, 1 cs.
American Tobacco Co., *Champlain,* Havre, 432 cs.
Braunstein Freres, Inc., *Champlain,* Havre, 9 cs.
De Manduit Paper Corp., *Pr. Roosevelt,* Havre, 195 cs.
H. H. Strauss, *Pipestone County,* Bordeaux, 10 cs.

WALL PAPER

J. E. Bernard & Co., *Pr. Roosevelt,* Havre, 7 pkgs.
——, *American Trader,* London, 3 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., *American Trader,* London, 5 bls.

NEWSPRINT

International Paper Co., *G.T.D.,* Gatineau, 354 rolls.
National Paper & Pulp Co., Inc., *Pr. Roosevelt,* Hamburg, 57 rolls.
Jay Madden Corp., *Pr. Roosevelt,* Finland, 187 rolls.
H. G. Craig Co., *G.D.D.,* Donnacona, 327 rolls.
Perkins Goodwin & Co., *Deutschland,* Hamburg, 143 rolls.
Jay Madden Corp., *Deutschland,* Finland, 283 rolls.
H. G. Craig Co., *Newscarrier,* Donnacona, 343 rolls.
News Syndicate Co., Inc., *Brand,* Comeau Bay, 7,629 rolls.
Parsons & Whittemore, Inc., *Blankaholm,* Wifstavarf, 58 rolls.
——, *Blankaholm,* Hallstavik, 79 rolls.
International Paper Co., *International #1,* Gatineau, 337 rolls.
International Paper Sales Co., *Dea,* Dalhousie, 2,586 rolls, (N. Y.), 829 rolls, (Richmond, Va.).
Jay Madden Corp., *Manhattan,* Finland, 262 rolls.
H. G. Craig Co., *A.C.D.,* Donnacona, 341 rolls.
J. L. Hammett & Co., *Rydboholm,* Gothenburg, 138 rolls.
Jay Madden Corp., *Rydboholm,* Kotka, 135 rolls.
Walker Goulard Plehn Co., Inc., *Rydboholm,* Kotka, 152 bls.
Lunham & Raave, Inc., *Rydboholm,* Kotka, 197 rolls.
H. G. Craig Co., *Kermic,* Donnacona, 372 rolls, 32 bdls.
News Syndicate Co., Inc., *Chr. Knudsen,* Comeau Bay, 5,745 rolls.
Perkins Goodwin & Co., *Hamburg,* Hamburg, 334 rolls.
Perkins Goodwin & Co., *Hamburg,* Bremen, 205 rolls.
Jay Madden Corp., *Hamburg,* Finland, 412 rolls.
Pagel Horton & Co., Inc., *Bergensfjord,* Skien, 467 rolls.

PRINTING PAPER

Globe Shipping Co., *Deutschland,* Hamburg, 3 cs.
R. J. Saunders, *Champlain,* Southampton, 14 cs.

WRAPPING PAPER

Keller Dorian Paper Co., *Excambion,* Marseilles, 3 cs.
——, *Ingrid Thorden,* Mantyluoto, 775 bls., 4608 rolls.
——, *Rydboholm,* Gothenburg, 89 rolls.

FILTER COMPOUND

——, *L. Fransqui,* Antwerp, 10 bls.

FILTER PAPER

H. Reeve Angel & Co., Inc., *American Trader,* London, 16 cs.

DRAWING PAPER

Keuffel & Esser Co., *Manhattan,* Hamburg, 31 cs.

METAL COVERED PAPER

Winter Wolff & Co., *Bremen,* Bremen, 11 cs.

PHOTO PAPER

J. J. Gavin & Co., *Queen Mary,* Southampton, 10 cs., (unsensitized).

DECALCOMANIAS

Sellers Transportation Co., *Bremen,* Bremen, 9 cs.

TISSUE PAPER

W. J. Byrnes & Co., *Queen Mary,* Southampton, 5 cs.

WRITING PAPER AND ENVELOPES

H. W. Robinson & Co., *American Trader,* London, 4 cs.

WRITING PAPER

H. W. Robinson & Co., *Manhattan,* Havre, 1 cs.

CARD BOARD

Walker Goulard Plehn Co., Inc., *Scythia,* Liverpool, 3 cs., (glazed).

PAPER CLOTH

H. Pollak, *Pr. Roosevelt,* Havre, 4 bls.

PAPER TUBES

——, *Deutschland,* Hamburg, 46 cs.
——, *Hamburg,* Hamburg, 13 cs.

MISCELLANEOUS PAPER

Corn Exchange Bank Trust Co., *Kiyosumi Maru,* Kobe, 14 cs.
——, *Caraibe,* Havre, 8 cs.
Japan Paper Co., *Yamazato Maru,* Kobe, 54 cs.

RAGS, BAGGINGS, ETC.

Chase National Bank, *Kiyosumi Maru,* Kobe, 20 bls. rags.
Chase National Bank, *Rodina,* Leningrad, 1,106 bls. linen rags.
National City Bank, *Rodina,* Leningrad, 1,482 bls. flax waste, 145 bls. linen thread waste, 141 bls. linen rags.
W. J. Green Co., Inc., *Rodina,* Leningrad, 674 bls. new grey linens.
American Express Co., *Rodina,* Leningrad, 817 bls. linen rags.
The Barrett Co., *Tonsbergfjord,* Antwerp, 108 bls. rags.
Victory Shipping Co., *Tonsbergfjord,* Antwerp, 29 bags waste paper.
A. W. Fenton, Co., Inc., *Pr. Roosevelt,* Hamburg, 13 bls. linen rags.
Continental Bank Trust Co., *American Trader,* London, 38 bls. linen rags.
R. Blank, *Excambion,* Alexandria, 72 bls. old cottons.
Darmstadt Scott & Courtney, *Black Osprey,* Rotterdam, 50 bags bag scrap.
——, *Scythia,* Liverpool, 3 bls. rags.
W. J. Green Co., Inc., *Pipestone County,* Bordeaux, 48 bls. rags.
——, *Pipestone County,* St. Nazaire, 68 bls. rags.
W. J. Green Co., Inc., *Pipestone County,* St. Nazaire, 43 bls. old linen rags.
W. J. Green Co., Inc., *Pipestone County,* Havre, 22 bls. rags.

WOOD PULP

Gottesman & Co., Inc., *Rydboholm,* Gothenburg, 1,129 bls. sulphate.
Gottesman & Co., Inc., *Belos,* Hernosand, 9,000 bls. kraft pulp, 1,500 tons.
——, *Klaus Schoke,* Obbola, 3,500 bls. dry sulphate, 500 tons.
Bulkley Dunton Pulp Co., Inc., *Klaus Schoke,* ——, 4,075

bls. dry sulphite, 715 tons; 1,325 bls. dry sulphite, 265 tons; 750 bls. kraft sulphate, 125 tons.
Cellulose Sales Corp., *Klaus Schoke,* Soderhamn, 225 bls. dry sulphite, 55 tons.
———, *Klaus Schoke,* Hernosand, 6,270 bls. sulphate, 2,520 bls. sulphite.
Mead Sales Co., *Klaus Schoke,* Sundsvall, 500 bls. dry sulphite, 50 tons.
Cellulose Sales Corp., *Klaus Schoke,* Sundsvall, 1,320 bls. kraft sulphate, 220 tons; 150 bls. dry chemical pulp, 25 tons; 3,725 bls. dry sulphite, 630 tons.
Stora Kopparberg Corp., *Blankaholm,* Skutskar, 930 bls. dry pulp.
Price & Pierce, Ltd., *Rydboholm,* Gothenburg, 150 bls. unbleached sulphite.
J. Anderson & Co., *Rydboholm,* Gothenburg, 625 bls. bleached sulphite.
Castle & Overton, Inc., *Rydboholm,* Viipuri, 789 bls. unbleached pulp, 1068 bls. bleached pulp.
Pulp Sales Corp., *Rydboholm,* Viipuri, 1,755 bls. sulphate.
Pagel Horton & Co., Inc., *Belos,* Gefle, 2,500 bls. sulphate, 508 tons.
———, *Belos,* Iggesund, 2,600 bls. sulphate.

WOOD PULP BOARDS

Rapid Electrotype Co., *Pr. Roosevelt,* Hamburg, 124 pkgs, 25 cs.
Jay Madden Corp., *Rydboholm,* Kotka, 284 rolls.

PORTLAND IMPORTS

WEEK ENDING MAY 27, 1939

Price & Pierce, Ltd., *Hallaren,* ———, 600 bls. unbleached sulphite.

NEW LONDON IMPORTS

WEEK ENDING MAY 27, 1939

Gottesman & Co., Inc., *Etna,* Sweden, 2,250 bls. wood pulp.
Pagel Horton & Co., Inc., *Etna,* Sweden, 2,500 bls. wood pulp.
Price & Pierce, Ltd., *Etna,* ———, 2,400 bls. unbleached sulphite.

BOSTON IMPORTS

WEEK ENDING MAY 27, 1939

J. Andersen & Co., *Klaus Schoke,* Soderhamn, 300 bls. dry sulphite, 60 tons.
Perkins Goodwin & Co., *Klaus Schoke,* Obbola, 1,750 bls. dry sulphate, 250 tons.
Bank of N. Y. Trust Co., *Klaus Schoke,* Hernosand, 660 bls. dry sulphite.
Brown Bros., Harriman & Co., *Klaus Schoke,* Hernosand, 960 bls. dry sulphate.
———, *Klaus Schoke,* Hernosand, 4,510 bls. dry sulphite.
Atterbury Bros., Inc., *Klaus Schoke,* Sundsvall, 750 bls. dry wood pulp, 125 tons.
Cellulose Sales Corp., *Klaus Schoke,* Sundsvall, 750 bls. dry chemical pulp, 156 tons; 1,290 bls. dry sulphite, 250 tons; 3,066 bls. kraft sulphate, 611 tons.
Mead Sales Co., *Klaus Schoke,* Sundsvall, 240 bls. dry sulphite, 40 tons.
Perkins Goodwin & Co., *Klaus Schoke,* Sundsvall, 6,000 bls. kraft sulphate, 1,000 tons.
Bulkley Dunton Pulp Co., Inc., *Klaus Schoke,* ———, 300 bls. kraft sulphate, 50 tons.
Atkinson Haserick & Co., *Excambion,* Genoa, 6 cs. paper.

PHILADELPHIA IMPORTS

WEEK ENDING MAY 27, 1939

Gottesman & Co., Inc., *Rydboholm,* Gothenburg, 1,083 bls. sulphate, 127 bls. sulphite.
United Clay Mines Corp., *Noordam,* Rotterdam, 40 tons china clay.
E. J. Keller Co., Inc., *Excambion,* ———, 84 bls. old cottons.
Castle & Overton, Inc., *Black Osprey,* Rotterdam, 133 bls. rags.
E. J. Keller Co., Inc., *Black Osprey,* ———, 91 bls. rags.
Pulp Sales Corp., *Ingrid Thorden,* Kotka, 2,650 bls. sulphite.
Pulp Sales Corp., *Ingrid Thorden,* Viipuri, 6,096 bls. sulphite.
Pulp Sales Corp., *Ingrid Thorden,* Mantypuoto, 254 bls. mechanically ground pulp.
———, *Ingrid Thorden,* Mantypuoto, 89 rolls wrapping paper.
Brown Bros., Harriman & Co., *Ingrid Thorden,* Mantypuoto, 707 rolls, 13 bls. wrapping paper.
Perkins Goodwin & Co., *Rydboholm,* Gothenburg, 508 bls. sulphate.
The Borregaard Co., Inc., *Rydboholm,* Gothenburg, 162 rolls paper.
Castle & Overton, Inc., *Rydboholm,* Viipuri, 267 bls. unbleached pulp, 1,053 bls. bleached pulp.
Pulp Sales Corp., *Rydboholm,* Viipuri, 305 bls. sulphite.
Jay Madden Corp., *Rydboholm,* Kotka, 30 rolls wrapping paper.
J. W. Hampnot, Jr., & Co., *Rydboholm,* Kotka, 60 rolls wrapping paper.
Wilkinson Bros., & Co., Inc., *Rydboholm,* Kotka, 144 rolls wrapping paper.
Jay Madden Corp., *Rydboholm,* Kotka, 550 bls. wood pulp boards.
E. H. Bailey & Co., *Pipestone County,* Havre, 1 cs. drawing paper.
E. J. Keller Co., Inc., *Pipestone County,* ———, 231 bls. rags.
———, *West Cusseta,* Hamburg, 349 rolls wrapping paper.
Keer Maurer Co., Inc., *West Cusseta,* Hull, 62 coils old rope.
———, *Exermont,* Constanza, 1,500 bls. bleached wood pulp, 300 tons; 1,000 bls. unbleached wood pulp, 200 tons.
Pagel Horton & Co., Inc., *Tortugas,* ———, 38 rolls newsprint.

BALTIMORE IMPORTS

WEEK ENDING MAY 27, 1939

Stora Kopparberg Corp., *Blankaholm,* Skutskar, 1,060 bls. dry pulp.
Perkins Goodwin & Co., *Blankaholm,* Gefle, 250 bls. dry sulphate.
Bulkley Dunton Pulp Co., Inc., *Blankaholm,* ———, 1,000 bls. dry sulphite, 1,750 bls. sulphate.
Perkins Goodwin & Co., *Blankaholm,* Wifstavarf, 1,500 bls. dry sulphite, 1,800 bls. dry sulphate.
Nolan Bowmall & Co., Inc., *Blankaholm,* Wifstavarf, 148 rolls newsprint.
Parsons & Whittemore, Inc., *Blankaholm,* Wifstavarf, 70 rolls newsprint.
———, *Blankaholm,* Wifstavarf, 338 bdls. wall board.
Washington News, *Blankaholm,* Hallstavik, 463 rolls newsprint.
———, *Rydboholm,* Gothenburg, 600 bls. sulphite.
Northern States Envelopes Co., *Rydboholm,* Gothenburg, 98 bls. kraft paper.
The Borregaard Co., Inc., *Rydboholm,* Gothenburg, 350 bls. bleached wood pulp.
Bulkley Dunton Pulp Co., Inc., *Rydboholm,* ———, 600 bls. mechanical pulp.
Pulp Sales Corp., *Rydboholm,* Helsingfors, 260 bls. mechanically ground pulp.
Castle & Overton, Inc., *Rydboholm,* Viipuri, 1,715 bls. bleached wood pulp.
Pulp Sales Corp., *Rydboholm,* Spjutsund, 1,768 bls. mechanically ground pulp.
Jay Madden Corp., *Rydboholm,* Kotka, 71 rolls newsprint.
Wilkinson Bros., & Co., Inc., *Rydboholm,* Kotka, 145 rolls newsprint.
Whitaker Paper Co., *Rydboholm,* Kotka, 222 rolls newsprint.
Congoleum Nairn Co., *Pipestone County,* Bordeaux, 608 bls. rags.
Congoleum Nairn Co., *Pipestone County,* St. Nazaire, 384 bls. rags.
———, *West Cusseta,* Hamburg, 75 bls. wood pulp, 15 tons.
Parsons & Whittemore, Inc., *Tortugas,* ———, 100 bls. wood pulp.
M. Sone, *Lehigh,* Hamburg, 1,050 bls. wood pulp.
Pagel Horton & Co., Inc., *Tortugas,* ———, 67 rolls newsprint.

NORFOLK IMPORTS

WEEK ENDING MAY 27, 1939

Guaranty Trust Co., *Belos,* Hernosand, 5,700 bls. sulphate, 950 tons.
R. J. Reynolds Tobacco Co., *Pipestone County,* St. Nazaire, 1,887 cs. cigarette paper.
Champagne Paper Corp., *Pipestone County,* St. Nazaire, 234 cs. cigarette paper.
Champagne Paper Corp., *Pipestone County,* Havre, 310 cs. cigarette paper.
H. H. Strauss, *Pipestone County,* Bordeaux, 156 cs. cigarette paper.
———, *West Cusseta,* Hamburg, 70 rolls wrapping paper.

MONTREAL IMPORTS

WEEK ENDING MAY 27, 1939

Gottesman & Co., Inc., *Francois L. D.,* Sweden, 1,800 bls. wood pulp.
Gottesman & Co., Inc., *Braheholm,* Sweden, 9,000 bls. wood pulp.
M. Sone, *Francois L. D.,* Stugsund, 2,500 bls. wood pulp.
M. Sone, *Francois L. D.,* Sundsvall, 3,000 bls. wood pulp.
Pagel Horton & Co., Inc., *Akabahra,* Sweden, 5,795 bls. wood pulp.

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All kinds and styles of Felts for all kinds and styles of Papers.

Write us about your Felt problems and let us help you reduce your Felt Costs—we will call anywhere at any time.

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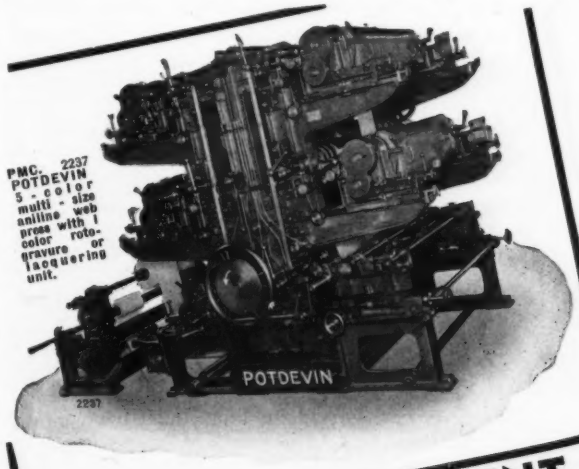

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New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, May 31, 1939.

Wholesale business in the paper market continues at a comparatively high level for the current week, although a little decline in sales volume in some of paper is indicated in the reports received from many leading manufacturers' representatives, jobbers, and general paper merchants. According to the Department of Commerce dollar sales of 2,902 wholesalers increased 1.3 per cent in April 1939 over the same month last year.

The March gain was 4.8 per cent, February 4.3 per cent, and January 4.4 per cent higher than last year. The April 1939 wholesale volume was 7.0 per cent lower than in March, and totaled $185,109,000. Manufacturers' dollar sales on some grades of paper, such as book and writing paper, were 12.0 per cent higher than last year, though April 1939 sales were 14.1 per cent lower than in March of this year. Wax paper was up 4.5 per cent in April 1939, and 12.0 per cent under March of this year.

Inventories of 1,726 wholesalers for April 1939 were 4.8 per cent under that of the same month last year. Value of stocks on hand of paper and its products for April of this year was 2.8 per cent above that of April of last year, and 9.4 per cent lower than in March 1939.

The index of general business activity rose to 86.1 per cent for the week ended May 20, from 85.3 per cent in the preceding week, compared with 75.0 per cent for the like period last year. Production of 211 paper mills for the week ended May 20, stood at an estimated 79.3 per cent, compared with 69.7 per cent for the corresponding week last year, and with 91.2 per cent for the week ended May 22, 1937. Paper board production for the week ended May 20 was 65.0 per cent, compared with 58.0 per cent for the corresponding week last year, and with 86.0 per cent for the week ended May 22, 1937.

The newsprint market continues unchanged for the week. No important increase in advertising linage has been reported, consequently no increase in the number of pages of newspapers and in the consumption of newsprint has occurred to date. Business in this market is currently running less than five per cent above that of the current period last year and continues to be substantially below trade expectations. No improvement in the near future is expected in the trade and the trend in demand is uncertain at this date.

Sales volume for many grades of paper continues at a relatively high level for the current week. The prospects for an increase in the volume of some grades of book paper is reported in some quarters of the trade as more favorable. The demand for some grades of groundwood papers continues quite active, and the same market situation prevails in various grades of tissue papers. Kraft paper continues in active demand. No important change in the prices of any grade of paper has been reported at this date.

Mechanical Pulp

Consumption and demand for mechanical pulp continues good. Prices continue to conform to prevailing market quotations, with no important change in the market situation reported at this date.

Chemical Pulp

An increase in activity in some grades of chemical pulp has been reported during the current week. The trend in demand is now headed upward, according to reports from some quarters of the trade. No change in the prevailing representative market quotations has been reported to date. The outlook is viewed as more favorable by many in the trade.

Old Rope and Bagging

Trading in old rope continues limited with little, if any, mill buying outside of the regular sources of supply. Stocks at the mills are reported of ample size. Prices are unchanged at prevailing market levels. Transactions in old bagging are light, with mill buying reported in comparatively small lots. No change in prices has been reported this week.

Rags

A moderate good mill demand is reported in some quarters of the trade on a few grades of new and old domestic rags. No important changes in prevailing market quotations on any grades have been reported for the week, except on No. 1 and No. 2 roofing rags which are a little lower at this date; No. 1 roofing rags being currently quoted at 1.05 to 1.10, and No. 2 grade at .75 to .85.

Foreign trading in paper-making rags has been more active this spring, and imports for the first quarter of this year are more than three times larger than last year. Government reports showed that first quarter imports amounted to 36,634,148 pounds, valued at $358,644, compared with 11,093,423 pounds, valued at $284,086 for the first three months of last year.

Old Waste Paper

The old waste paper market continues at about the same level of activity as in the previous week. Mill buying is reported as moderately good in many grades. Prices are unchanged and conform to prevailing market quotations.

Twine

No important change in demand or prices has been reported in the twine market during the current week. The business prospect is viewed in the trade as favorable and prices hold relatively firm on all grades of hard and soft fiber twines.

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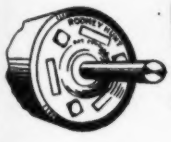

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Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, May 31, 1939.

BLANC FIXE—Prices on blanc fixe continue firm and unchanged at prevailing market quotations. The pulp is currently quoted at from $42.50 to $45 per ton, in bulk; the powder is offered at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER—Quotations on bleaching powder remain firm and conform to prevailing market levels. Bleaching powder is currently quoted at from $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN—The casein market is active under a good demand for the week. Standard domestic casein, 20-30 mesh, is quoted at from 8½ to 9 cents per pound; 80-100 mesh, at from 9 to 9½ cents per pound; all prices in bags, car lot quantities.

CAUSTIC SODA—Prices on caustic soda continue firm and unchanged at prevailing market quotations. Solid caustic soda is quoted at from $2.10 to $2.30 per 100 pounds; flake and ground at from $2.50 to $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Quotations on china clay continue firm and remain unchanged at prevailing market levels. Domestic filler clay is quoted at from $6.50 to $12 per ton; coating clay at from $11 to $22 per ton, at mines. Imported clay is offered at from $13 to $25 per ton, ship side.

CHLORINE—Prices on chlorine continue firm and conform to prevailing market levels. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market is reported as firm under a good demand for the current week. "G" gum rosin is quoted at $4.85; "FF" wood rosin at $4.30, per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent gum rosin size is offered at $2.71 per 100 pounds, f.o.b., shipping point.

SALT CAKE—Prices on salt cake continue firm and unchanged at prevailing market quotations. Prices range at from $12 to $13.50 per ton; chrome salt cake at from $11 to $12 per ton, f.o.b., shipping point. Imported salt cake is quoted at from $14.50 to $15 per ton, Gulf or Atlantic Seaboard, on dock.

SODA ASH—Quotations on soda ash continue firm and unchanged at prevailing market levels. Prices on soda ash in car lots, at works, per 100 pounds, are as follows: in bulk, $.90; in bags, $1.05; and in barrels, $1.35.

STARCH—The corn starch market is reported as firm for the current week under a good demand. Globe pearl is quoted at $2.60 per 100 pounds; special paper starch at $2.70 per 100 pounds. All prices in bags, car lot quantities, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina continue firm and unchanged at prevailing market levels. The commercial grades are quoted at $1.15; iron free at $1.30 per 100 pounds, in bags, car lot quantities, f.o.b., works.

SULPHUR—Prices on sulphur continue firm and unchanged at prevailing market levels under a good demand. Annual contracts are quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are offered at $19 per ton.

TALC—The demand for talc is reported as good for the current week. Quotations are firm and conform to prevailing market levels. Domestic talc is quoted at from $15 to $18 per ton, Eastern mines. Imported talc is offered at from $20 to $40 per ton, on dock.

Market Quotations

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	@	—
Kraft—per cwt.—Delivered Zone A			
No. 1 Northern	$4.75	@	$5.25
Superstandard	4.12½	@	4.62½
Northern Standard Wrapping	4.00	@	—
Standard Wrapping	3.50	@	—
Tissues—Per Ream—Carlots			
White No. 1	$0.82½	@	—
White No. 1 M. G.	.80	@	—
White No. 1½	.67½	@	—
White No. 2	.60	@	—
Anti-Tarnish M. G.	.65	@	—
Colored	.77½	@	—
Kraft	.65	@	—
Manila	.60	@	—
Unbl. Toilet, 1 M.	2.65	@	—
Bleached Toilet	5.26	@	—
Paper Towels—Per Case			
Unbleached, Jr.	$1.75	@	—
Bleached Jr.	3.10	@	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	7.75	@	9.75
No. 1 Manila Wrapping, 35 lb.	5.00	@	—
No. 2 Manila Wrapping, 35 lb.	4.75	@	—
Boards, per ton—			
News	30.00	@	32.50
Chip	30.00	@	32.50
Sgl. Mia. Ll. Chip	42.50	@	—
Jute Lined Chip	42.50	@	45.00
White Pat. Coated	55.00	@	57.50
Kraft Liners	45.00	@	—
Binders Boards	71.00	@	77.00

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
100% Rag Ext. No. 1	$39.10	@ $46.00	$40.25	@ $47.25
100% Rag	31.05	@ 36.50	32.20	@ 37.75
85% Rag	.....		29.90	@ 35.00
75% Rag	23.60	@ 27.75	24.75	@ 29.00
65% Rag	.....		21.65	@ 26.25
50% Rag	17.55	@ 21.50	18.70	@ 22.75
25% Rag	14.65	@ 17.75	15.80	@ 19.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
No. 1	$8.60	@ $10.50	$9.75	@ $12.00
No. 2	7.70	@ 9.50	8.90	@ 10.75
No. 3	6.75	@ 8.25	7.90	@ 10.00
No. 4	7.00	@ 8.50	8.20	@ 10.00

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper, Delivered in Zone 1:

No. 1 Glossy Coated	$11.30	@	$12.75
No. 2 Glossy Coated	9.70	@	11.00
No. 3 Glossy Coated	8.60	@	10.00
No. 4 Glossy Coated	6.05	@	9.25
No. 1 Antique (watermarked)	8.05	@	9.25
No. 2 Offset	7.45	@	8.50
A Grade E. F.	7.20	@	8.25
A Grade S. & S. C.	7.45	@	8.50
B Grade E. F.	6.65	@	7.75
B Grade S. & S. C.	6.90	@	8.00
C Grade E. F.	6.40	@	7.50
C Grade S. & S. C.	6.65	@	7.75
D Grade E. F.	6.10	@	7.00
D Grade S. & S. C.	6.35	@	7.25

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	25.00	@	28.00
Dry	25.00	@	28.00
(Delivered)			
No. 1 Domestic and Canadian	29.00	@	31.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	2.25	@	2.75
Prime Qualities—			
Easy-Bleaching Sulphite	1.90	@	2.00
Strong Unbleached Sulphite	1.80	@	1.95
(On Dock, Atlantic Ports)			
Kraft Bleached	2.50	@	2.75
Kraft Light & Strong	1.60	@	1.75
Kraft No. 1	1.45	@	1.60
Kraft No. 2	1.35	@	1.40
(F. o. b. Pulp Mill)			
Kraft Domestic	1.25	@	1.75
(Delivered)			
Soda Bleached	2.55	@	—

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.85	@	7.00
Silesias No. 1	4.50	@	4.75
New Unbleached	6.75	@	7.00
Blue Overall	4.90	@	5.00
Fancy	1.75	@	2.00
Washables	1.50	@	1.60
Mixed Khaki Cuttings	2.25	@	2.50
O. D. Khaki Cuttings	3.25	@	3.40

Old Rags

White, No. 1—			
Repacked	2.90	@	3.15
Miscellaneous	2.10	@	2.35
White, No. 2—			
Repacked	1.50	@	1.60
Miscellaneous	1.25	@	1.40
Thirds and Blues—			
Repacked	1.30	@	1.40
Miscellaneous	1.15	@	1.20
Roofing Rags—			
No. 1	1.00	@	1.10
No. 2	.75	@	.85
No. 3 (bagging)	.55	@	.65
No. 4	.60	@	.65
No. 5A	.60	@	.65

Foreign Rags

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	@	2.20
New Light Silesias	5.50	@	5.75
Light Flannelettes	5.50	@	5.75
New White Cuttings	7.00	@	7.50
New Light Oxford	4.00	@	4.50
New Light Prints	3.00	@	3.25

Old Rags

No. 1 White Linens	7.50	@	8.50
No. 2 White Linens	6.50	@	7.50
No. 3 White Linens	4.50	@	—

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"EVOLVED THRU RESEARCH"
FOR BETTER PAPER PRODUCTION
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for a Shear Cut, a Clean Cut—
LANGSTON SLITTERS
AND ROLL WINDERS
can't be beat

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No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	@	4.75
No. 2 White Cotton.	3.25	@	3.75
No. 3 White Cotton.	2.50	@	3.00
No. 4 White Cotton.	1.90	@	2.20
Extra Light Prints..	2.00	@	2.40
Ord. Light Prints...	1.75	@	2.15
Med. Light Prints...	1.55	@	1.95
Dutch Blue Cottons.	2.25	@	2.50
French Blue Linens..	3.00	@	—
Checks and Blues...	2.00	@	—
Linsey Garments....	1.90	@	2.00
Dark Cottons.....	1.50	@	1.60
Old Shopperies.....	1.30	@	1.45
New Shopperies.....	1.45	@	1.50
French Blues.....	2.25	@	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.75	@	1.90
Domestic	1.75	@	1.80
Wool Tares, light...	1.60	@	1.70
Wool Tares, heavy..	1.80	@	1.90
Bright Bagging.....	1.60	@	1.70
Manila Rope—			
Foreign	2.60	@	2.75
Domestic	2.75	@	3.00
Jute Threads.....	3.00	@	3.25
Sisal Strings	1.50	@	1.60
Mixed Strings....	.55	@	.60

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.30	@	2.40
Ordinary Hard White No. 1....	1.90	@	2.00
Soft White No. 1..	1.60	@	1.75
Soft White Extra..	2.25	@	2.40
Flat Stock—			
Stitchless	.80	@	.85
Overissue Mag ...	.70	@	.75
Solid Flat Book...	.55	@	.60
Crumbled No. 1...	.40	@	.45
Ledger Stock White.	1.05	@	1.15
Ledger Stock Colored	.60	@	.70
New B. B. Chips....	.15	@	.20
Manila—			
New Env. Cut....	1.40	@	1.50
New Cuttings.....	1.00	@	1.20
Old Kraft Machine— Compressed bales.	.65	@	.70
News—			
No. 1 White News	1.25	@	1.30
Strictly Overissue.	.40	@	.45
Strictly Folded....	.37½	@	.42½
No. 1 Mixed Paper..	.17½	@	.22½

Twines

(F. o. b. Mill)
(Soft Fiber)

Coarse Polished—			
India	.12¾	@	.14¾
White Hemp.....	.13¾	@	.15¾
Fine Polished—			
Fine India.....	.16	@	.18
Unpolished—			
Box	.09½	@	—
Paper Makers.....	.09½	@	.10½
Tube Rope.....	.10¼	@	.12½
Wall Paper.....	.10¾	@	.12½
Wrapping	.12	@	—
Soft Fiber Rope...	.12	@	.14
Cotton	.16	@	.19
(Hard Fiber)			
Medium Java.....	.11	lb	.17
Mex. Sisal.....	.10	@	.16
Manila	.16	@	.23

Domestic	2.65	@	2.75
Sisal Rope	1.75	@	1.85
Mixed Rope.....	.45	@	.50
Transmission Rope...	1.90	@	2.00
Soft Jute Rope	2.00	@	2.25
Jute Carpet Threads.	.75	@	.90
Gunny Bagging—			
Foreign	1.50	@	1.65
Domestic	1.40	@	1.50
Bleachery Burlap....	2.50	@	2.70
Scrap Burlap—			
Foreign	1.35	@	1.40
Domestic	1.25	@	1.40
Scrap Sisal.....	1.75	@	1.80
Scrap Sisal for Shredding	1.80	@	2.10
Wool Tares, Heavy..	1.40	@	1.50
New Burlap Cuttings	2.25	@	2.40
Aust. Wool Pouches..	1.90	@	2.25
Heavy Baling Bagging	1.50	@	1.60
Paper Mill Bagging..	.90	@	1.00
No. 2 Bagging.....	.45	@	.60

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints...	.03¼	@	.03½
New White No. 1....	.06¾	@	.07
New Light Flannelettes	.05	@	—
Silesias No. 1.....	.04	@	.04¼
New Black Silesias..	.03½	@	.03¾
Soft Unbleached.....	6.50	@	7.00
Blue Cheviots.....	.05	@	.05¼
Fancy	.02	@	.02½
Washable	.02	@	.02¼

Cottons—According to grades—			
Blue Overalls.....	.04¾	@	.05
New Black, soft...	.03¾	@	.04
Khaki Cuttings.....	.02½	@	.02
O. D. Khaki.....	.03	@	.03¼
Corduroy	.02¾	@	.03
New Canvas.....	.06¾	@	.07¼
B. V. D. Cuttings...	.06¾	@	.07

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04¼	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues....	1.75	@	2.00
Old Blue Overalls...	1.50	@	—
Thirds and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62¼
Black Stockings.....	3.90	@	4.00
Roofing Stock—			
No. 1.....	1.00	@	1.10
No. 2.....	.75	@	.85
No. 3.....	.65	@	.70

Foreign Rags

(F. o. b. Boston)

Dark Cottons.....	.90	@	1.10
Dutch Blues.....	2.65	@	2.75
New Checks and Blues	2.85	@	3.00
Old Fustians.....	2.25	@	2.50
Old Linsey Garments	2.20	@	2.25
New Silesias.....	3.75	@	4.00

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phil.)

Shirt Cuttings—			
New White, No. 1.	.06½	@	.07
New White, No. 2.	.03½	@	.04
Light Silesias.....	.03½	@	.04
Silesias, No. 1....	—	@	.04½
Black Silesias, soft	—	@	.03
New Unbleached..	.05½	@	.06
Washable, No. 1..	.01½	@	.01¾
Blue Overall.....	.04½	@	.05
Cottons—According to grades—			
Washable No. 2...	.01	@	.01¼
New Blue.....	.01	@	.01¼
Fancy Percales...	—	@	.02½
New Black Soft...	.03	@	.03½
New Light Seconds	—	@	.04½
New Dark Seconds	.50	@	.75
Khaki Cuttings—			
No. 1 O. D.....	.03	@	.03½
No. 2 Mixed.....	.02	@	.02½
Corduroy	—	@	.02
New Canvas.....	.05	@	.05½
New Black Mixed.	.02½	@	.02¾

Domestic Rags (Old)

White No. 1—			
Repacked	2.75	@	3.00
Miscellaneous	2.00	@	2.25
Thirds and Blues—			
Miscellaneous	1.00	@	1.25
Repacked	1.50	@	1.75
Black Stockings (Export)	3.00	@	3.50
Roofing Stock—			
Foreign No. 1....	—	@	1.10
Domestic No. 1...	—	@	1.05
Domestic No. 2...	—	@	.85
Roofing Bagging..	—	@	.75

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.65	@	1.75
Domestic	1.50	@	1.75
Manila Rope.....	—	@	3.00
Sisal Rope.....	1.50	@	1.75
Mixed Rope.....	.75	@	1.00
Scrap—			
No. 1.....	—	@	1.75
No. 2.....	.95	@	1.00
Wool Tares, heavy..	3.25	@	3.50
Mixed Strings.....	.45	@	.50
No. 1 New Light Burlap	2.50	@	3.00
New Burlap Cuttings	1.75	@	2.00

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 2 Hard White	2.25	@	2.30
No. 2 Hard White	1.90	@	2.00
No. 1 Soft White.	1.75	@	1.80
No. 2 Soft White.	1.30	@	1.40
No. 1 Mixed.....	.65	@	.75
Solid Ledger Stock..	1.45	@	1.50
Ledger Stock, white.	1.15	@	1.20
Ledger Stock, colored	.75	@	.80
No. 1 Books, heavy.	.60	@	.75
Manila Cuttings....	1.45	@	1.50
Print Manila.....	.45	@	.50
Container Manila...	.35	@	.40
Kraft Paper.....	.75	@	.80
No. 1 Mixed Paper..	.22½	@	.27½
Straw Board Chip...	.25	@	.30
Binders Board Chip.	.25	@	.30
Corrugated Board...	.50	@	.55
Overissue News.....	.40	@	.45
Old Newspapers....	.35	@	.40

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.25	@	2.50
No. 1 Soft White.	1.85	@	2.15
No. 2 Mixed.....	.75	@	.80
Solid Ledger Books..	1.30	@	—
Overissue Ledger Stock	1.30	@	1.50
Mixed Ledgers.....	.85	@	.90
No. 1 Books, heavy..	.65	@	.75
No. 1 Books, light..	.65	@	.75
Crumpled Stitchless Book Stock.....	.55	@	.65
Manila Env. Cuttings	1.70	@	1.85
Manila Envelope Cuttings, Extra Quality	2.00	@	2.10
No. 1 Old Manila...	.65	@	.70
White Blank News..	1.30	@	1.40
No. 1 Kraft.....	.65	@	.75
Mixed Papers.....	.15	@	.17½
Print Manila.....	.45	@	.55
Container Manilas..	.27½	@	—
Old Newspapers....	.30	@	.37½
Paper Wool Strings..	.60	@	.65
Overissue News.....	.45	@	.50
Box Board Chips....	.20	@	.25
Corrugated Boxes....	.30	@	.32½
Kraft corrugated boxes	.60	@	.65
Screening Wrappers.	.40	@	.45

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	2.50	@	2.65

CHICAGO

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings....	1.80	@	1.90
No. 1 Hard White.	1.70	@	1.80
No. 1 Soft White..	1.50	@	—
Ledger & Writings..	.75	@	.80
Solid Books.....	.45	@	.50
Blanks	.90	@	—
Krafts	.45	@	.50
New Kraft Cuts.....	1.10	@	—
Manila Env. Cuts...	Nominal		
Ex. No. 1 Manila...	Nominal		
Print Manila	Nominal		
Overissue News.....	.35	@	—
Old Newspapers—			
No. 1 Folded News	.25	@	.30
No. 1 Mixed Paper	.15	@	.20
Roofing Stocks—			
No. 1.....	1.00	@	1.05
No. 2.....	.85	@	—

TORONTO

Paper

Bonds

Direct mill shipment in two-ton lots

No. 1 White	$35.50	@	—
No. 1 Tints	36.50	@	—
No. 2 White	25.50	@	—
No. 2 Tints	26.50	@	—
No. 2 Golden Rod..	27.50	@	—
No. 3 White	21.00	@	—
No. 4 White	15.00	@	—
No. 4 Tints	16.00	@	—
No. 4 Golden Rod...	17.00	@	—
Direct mill shipment in three-ton lots			
No. 5 White	$10.50	@	—
No. 5 Tints	11.50	@	—
No. 5 Golden Rod..	12.00	@	—
No. 6 White	9.00	@	—
No. 6 Tints	9.50	@	—
No. 6 Golden Rod..	11.00	@	—
No. 7 White	8.00	@	—
No. 7 Tints	8.50	@	—
No. 7 Golden Rod..	10.00	@	—
Book—			
No. 1 M. F.	$7.00	@	—
No. 2 M. F.	6.50	@	—
No. 3 M. F.	5.35	@	—
No. 1 S. C.	7.25	@	—
No. 2 S. C.	6.75	@	—
No. 3 S. C.	5.85	@	—

Coated Book & Litho

Ton Lots (resale)

No. 1	$12.00	@	—
No. 2	10.25	@	—
No. 3	8.90	@	—
Coated tinted	13.00	@	—
Wrapping—delivered—			
Rag Brown.....	4.85	@	5.25
White Wrap.....	4.00	@	—
"B" Manila.....	4.90	@	6.15
No. 1 Manila.....	5.50	@	6.90
Fiber	5.50	@	6.90
Kraft No. 2.....	5.50	@	6.90

(F. o. b. Cars, Toronto)

News per ton—			
Rolls (contract)..)	46.00	@	—
Sheets	54.00	@	—

Pulp

Ground wood.....	$29.00	@	—
Unbleached sulphite.	44.00	@	—
Bleached sulphite...	54.00	@	—
Kraft	50.00	@	—
Soda	54.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut...	2.00	@	—
Soft White.....	1.75	@	—
White Blk. News..	1.25	@	1.10
Book and Ledger—			
Flat Magazine and Book Stock (old)	.70	@	—
Light and Crumpled Book Stock.	.60	@	—
Ledgers and Writings	1.00	@	—
Manilas—			
New Manila Cut...	1.35	@	—
Printed Manilas...	.45	@	—
Kraft	.95	@	—
News and Scrap—			
Strictly Overissue..	.50	@	—
Strictly Folded....	.45	@	—
No. 1 Mixed Paper..	.30	@	—

Domestic Rags

(Price to Mills, f.o.b. Toronto)

No. 1 White Shirt Cuttings	.06¼	@	.06½
Light Prints.....	.02½	@	.03¼